(FINAL)
SITE-SPECIFIC
HEALTH AND SAFETY PLAN

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) PROGRAM

NWIRP CALVERTON
SUFFOLK COUNTY, NEW YORK

CONTRACT NUMBER N62472-90-D-1298

CONTRACT TASK ORDER 002

JULY 1991

HALLIBURTON NUS
Environmental Corporation

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R-49-7-91-1

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SITE-SPECIFIC HEALTH AND SAFETY PLAN

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) PROGRAM

NWIRP CALVERTON
SUFFOLK COUNTY, NEW YORK

SUBMITTED TO:
NORTHERN DIVISION
ENVIRONMENTAL BRANCH, CODE 14
NAVAL FACILITIES ENGINEERING COMMAND
BUILDING 77-L, U.S. NAVAL BASE
PHILADELPHIA, PENNSYLVANIA 19112-5094

SUBMITTED BY:
HALLIBURTON NUS ENVIRONMENTAL CORPORATION
PARK WEST TWO, 2100 CLIFF MINE ROAD
PITTSBURGH, PENNSYLVANIA 15275

CONTRACT NUMBER N62472-90-D-1298

CONTRACT TASK ORDER 002

JULY 1991

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PROGRAM MANAGER

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1.0 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

Site Name: NWIRP Calverton

Address: Suffolk County, New York

Client Contact: Frank Klanchar

Phone Number: (215)897-6280

Other Contacts: Martin Simonson

Phone Number: (516)575-9952

Phone Number:

Effective Date: 07/15/91

Purpose of Site Visit: Remedial Investigation

Proposed Dates of Work: Start first or second week of August and last approximately 7 weeks.

Project Team:

HALLIBURTON NUS Personnel:	Discipline/Tasks Assigned:
Dave Brayack	Project Manager
Randy Patarcity	Field Operations Leader (FOL)
Kevin Kilmarton	
Alan Margraf	Site Safety Officer (SSO)

Non-HALLIBURTON NUS Personnel/Affiliation	

Plan Preparation:

Prepared by: _____ (__/__/__)

Reviewed and Approved by: _____ (__/__/__)

Reviewed:

HALLIBURTON NUS

Project Manager: _____

Follow Up Report:

Responsible Person: Field Operations Leader

(Must fill out Follow-up Report)

1.1 INTRODUCTION

This Draft Health and Safety Plan (HASP) has been developed to provide safety procedures for HALLIBURTON NUS Environmental Corporation employees and HALLIBURTON NUS subcontractor personnel engaged in Remedial Investigation activities at the NWIRP Calverton facility. This plan was developed using available information regarding known/suspected chemical contaminants and physical hazards that may be encountered during the planned investigatory activities. If additional information becomes available prior to or throughout the course of field activities, this document will be modified accordingly. Modifications will be determined by the HALLIBURTON NUS Health and Safety Officer (HSO) and will be immediately communicated to appropriate personnel. This HASP is intended to be in compliance with 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response; Final Rule."

2.0 BACKGROUND

2.1 ACTIVITY LOCATION

Naval Weapons Industrial Reserve Plant (NWIRP) Calverton is located at the eastern end of Long Island, in Suffolk County. New York. It covers almost 6,000 acres, a portion in the town of Riverhead and the remaining part is in Brookhaven. Refer to Figure 2-1.

2.2 ACTIVITY MISSION AND HISTORY

The mission of NWIRP Calverton is to assemble, develop, and flight-test aircraft for the U.S. military. (NWIRP Bethpage manufactures many of the components assembled and tested at NWIRP Calverton.)

NWIRP Calverton was built during the Korean War. Construction was completed in 1954. Its mission continues to be the assembly, testing, refitting, and retrofitting of Naval aircraft. The Department of Navy personnel oversees the work done by civilian experts and technicians employed by Grumman Aerospace Corporation (Grumman).

NWIRP Calverton is a Government Owned Contractor Operated (GOCO) activity operated by the Grumman Aerospace Corporation. The facility covers 11 square miles, most of which is owned by the Navy. Plant 08 (an avionics test building) and its guard booth are the only structures situated on land owned by Grumman (General Plan, March 1985).

2.3 BACKGROUND OF SPECIFIC SITES TO BE INVESTIGATED

2.3.1 Site 1: Northeast Pond Disposal Area

The NWIRP Calverton Northeast Pond Disposal Area (Figure 2-2) is located in the northeastern portion of the activity. The area of contamination is located south of Middle County Road (Route 25) and 5,000 feet east of the north gate of the activity.

Aerial photographs taken between 1947 and 1984 indicate that the area was active more or less continuously from 1947 through about 1984.

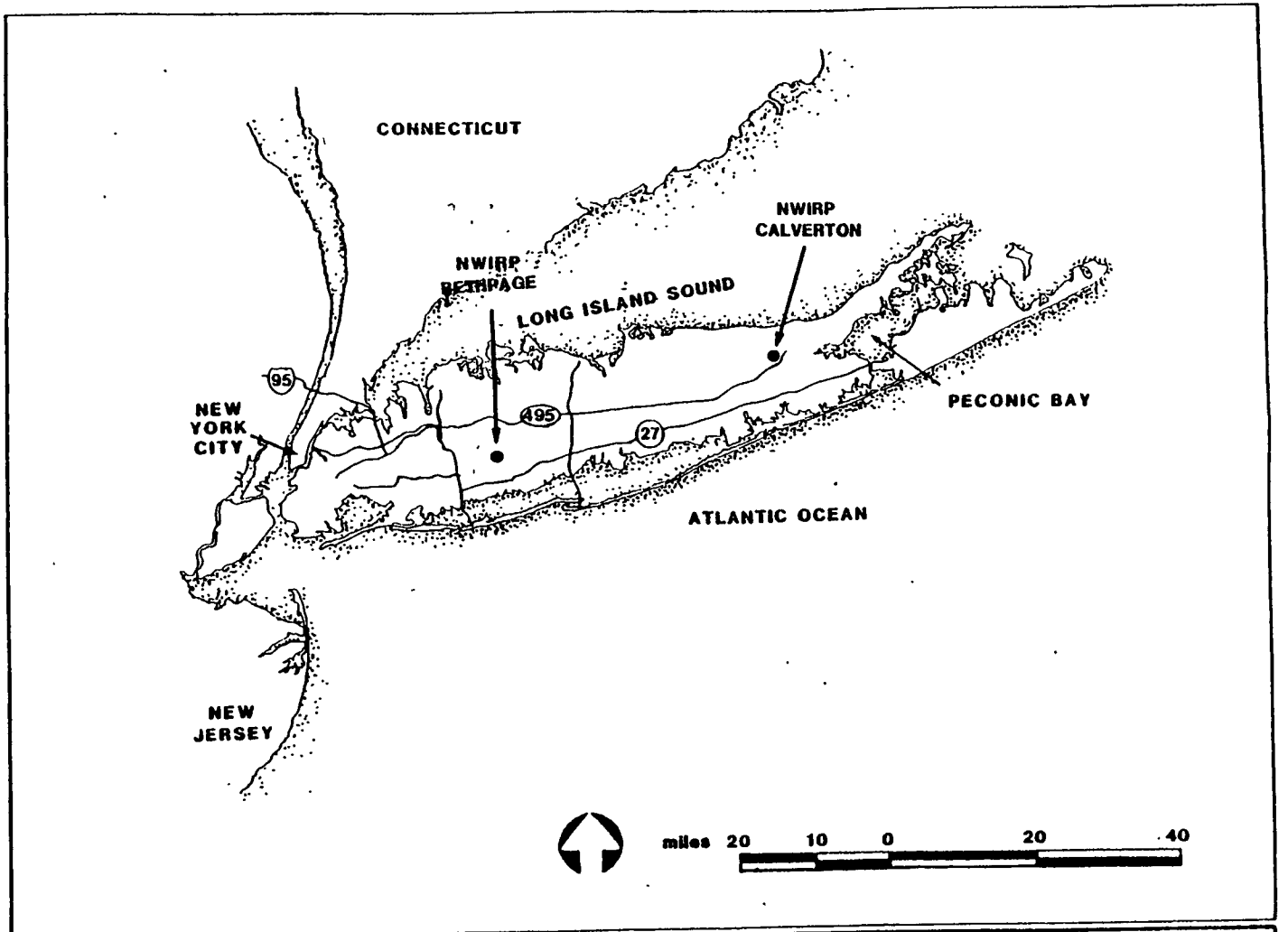


Figure 2-1

General Location Map,
NWIRP Bethpage, New York and
NWIRP Calverton, New York

Initial Assessment Study
Naval Weapons Industrial
Reserve Plant
Bethpage and Calverton
Long Island, New York

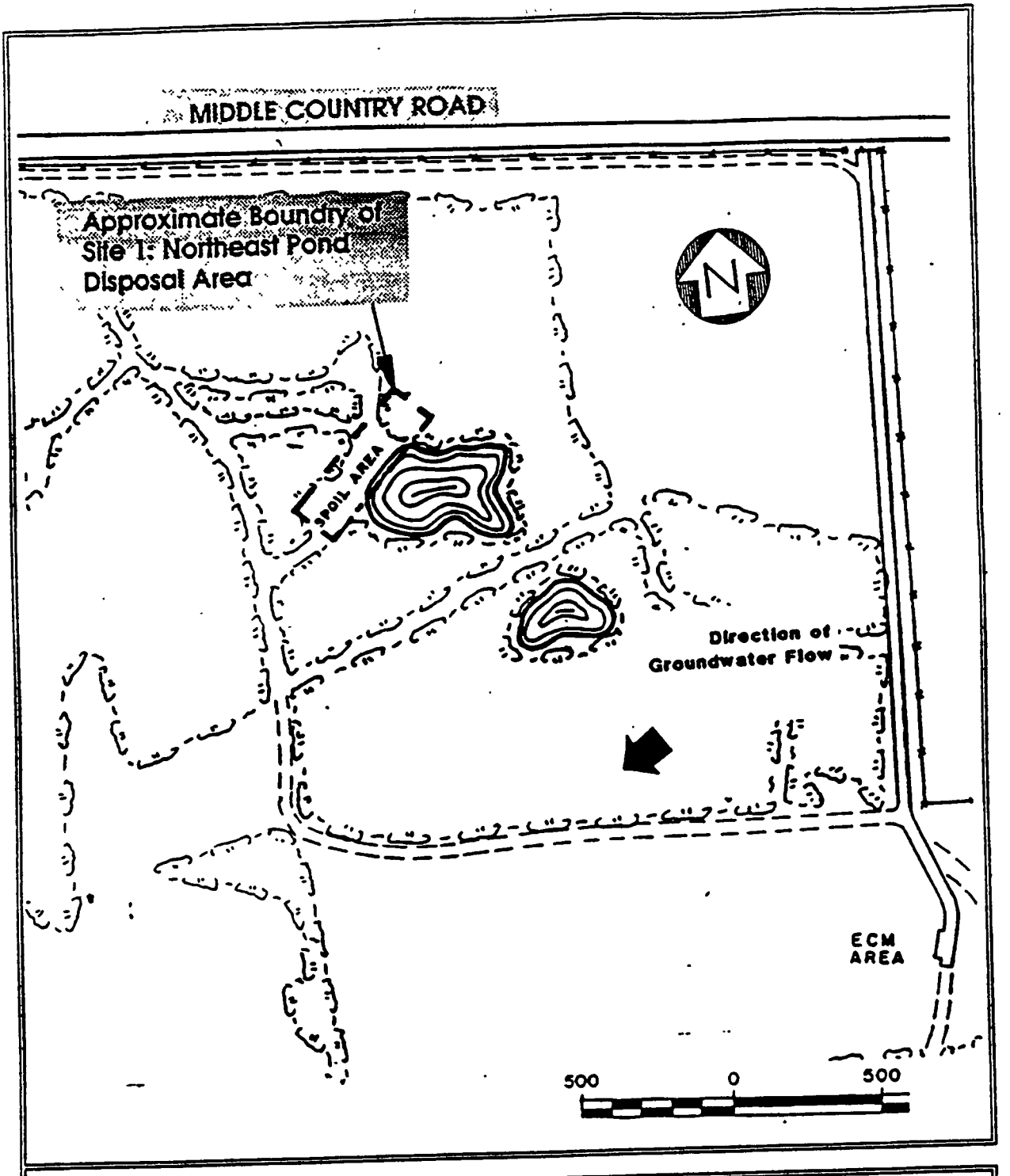


FIGURE 2-2 NORTHEAST POND DISPOSAL AREA (SITE 1)	NORTHERN DIVISION NWIRP, CALVERTON SITE INVESTIGATION

The Preliminary Assessment estimated that the thickness of the disposed material is approximately 20 feet and the estimated volume of the site is 7,500 cubic yards of debris and cover material.

The following types of disposed material at the site have been documented in the Preliminary Assessment: a cockpit portion of an aircraft fuselage fabricated primarily of aluminum and metal components; a large number of concrete columns; piles of asphalt macadam, plywood, and framing lumber; scraps of rusting metal parts; hulks of several 5-gallon pails and numerous 1-gallon paint pails containing small amounts of paint residue.

2.3.2 Site 2: Fire Rescue Training Area

The Fire Rescue Training (Figure 2-3) has been used exclusively by the Grumman Crash Crew and other fire fighting personnel at NWIRP Calverton since 1952. Fire Rescue Training Area appears to be a bermed ring created from site soils. This early gaining ring was unlined. For training exercises, this ring was partially filled with water and a layer of fuel was floated on top of the water. This fuel layer was ignited to provide fire fighting practice. An estimated 450 gallons per year of solvent (including toluene, methylethyl ketone, and lacquer thinner) were disposed of in this manner from 1953 to 1975. An estimated 1,500 to 2,000 gallons per year of waste fuel oils were mixed with the disposed solvents and burned at the site. This practice was stopped in 1975. Reportedly, since 1975 personnel have burned only clean (unmixed) fuel.

Two spills occurred in 1982 and 1983. One spill originated from a 6,000-gallon underground oil supply tank used for the exercises; and the other spill (1983) involved 300 gallons from another storage tank in this area.

The entire Fire Rescue Training Area has been upgraded with concrete berms installed to contain the oil and water used in the training exercises. The piping was modified to prevent spills and a direct line was installed between the storage tank and the training area. The underground 6,000-gallon tank was removed and replace by an aboveground 1,000-gallon tank.

Hazardous wastes potentially present at the site include POLs, toluene, and methylethyl ketone and soluble leads from gasoline burned during the exercises.

2.3.3 Site 4: Picnic Grounds Disposal Area

This area is located on the edge of a wooded parcel which extends roughly 2,500 feet west of this remote site to the activity boundary (Figure 2-4).

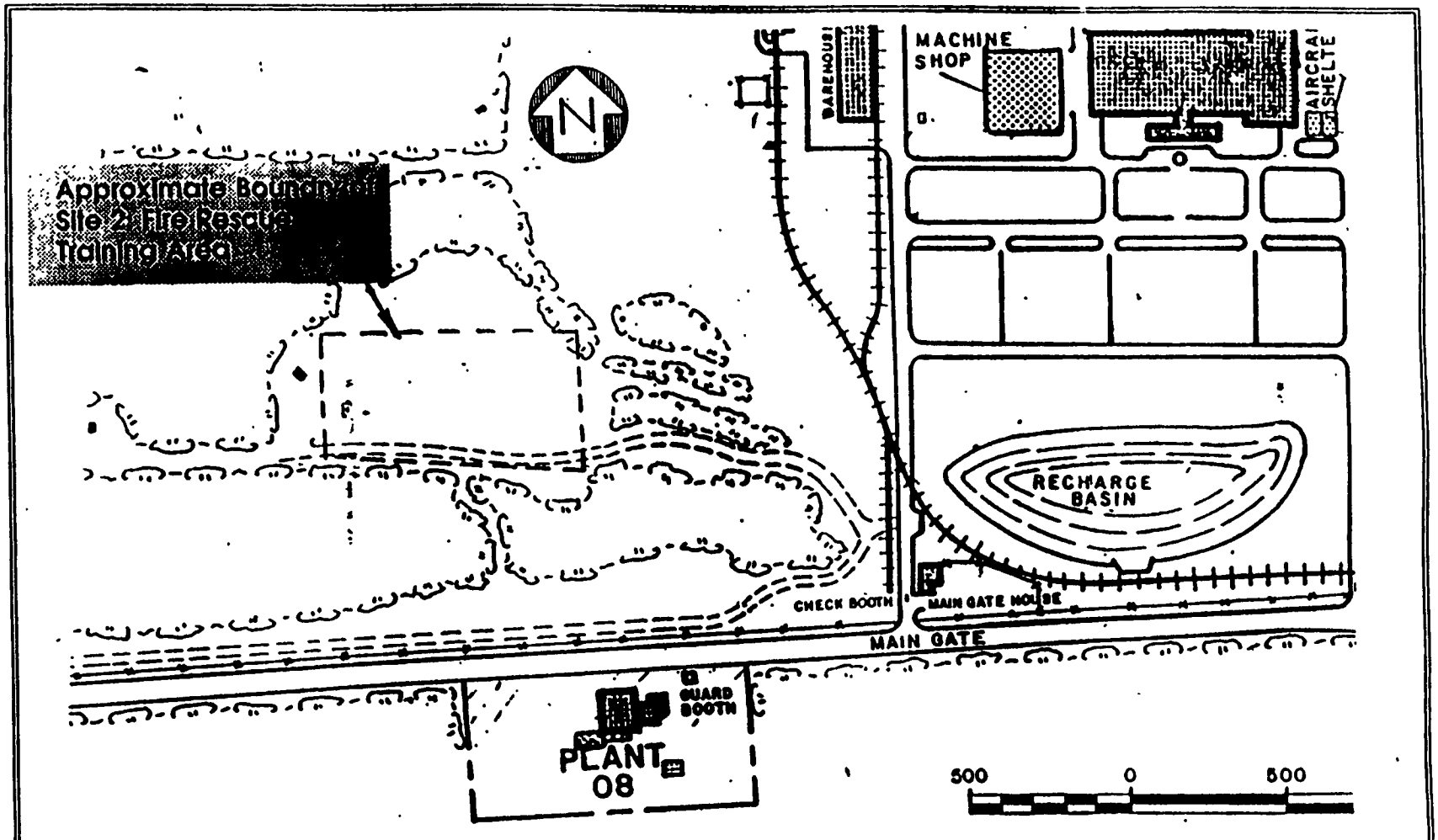


FIGURE 2-3 SITE PLAN FIRE RESCUE TRAINING AREA (SITE 2)	NORTHERN DIVISION NWIRP CALVERTON SITE INVESTIGATION

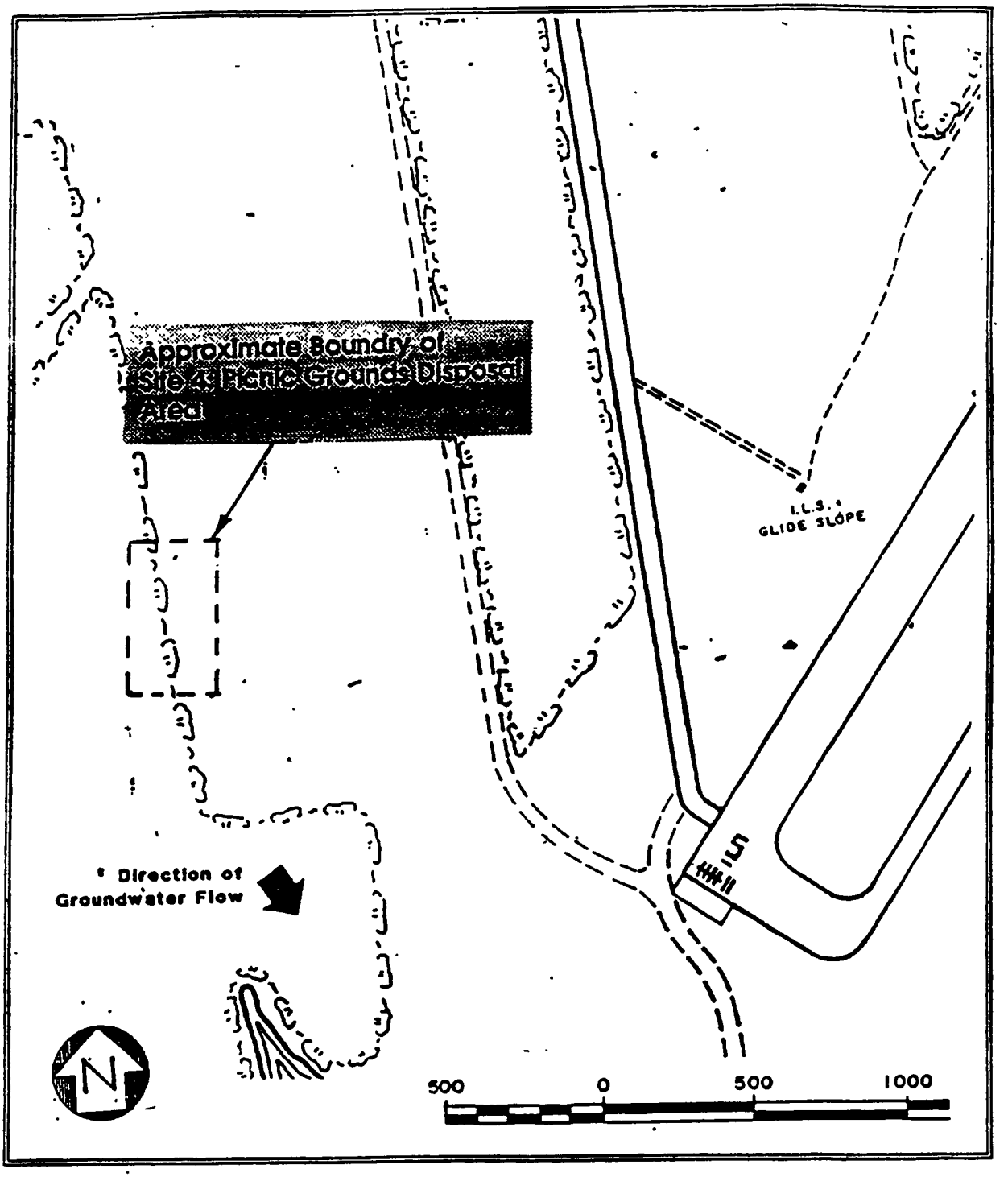


FIGURE 2-4 SITE PLAN PICNIC GROUNDS DISPOSAL AREA (SITE 4)	NORTHERN DIVISION NWIRP, CALVERTON SITE INVESTITGATION

The Preliminary Assessment noted that the area has been an active disposal site since 1947.

Materials suspected to be disposed of included framing lumber fencing, steel wall studs such as those used in commercial construction, steel stairways and ladders like those used to service aircraft, tubular towbars, and tubular steel supports.

2.3.4 Sites 6A, B, C: Fuel Calibration/Engine-Run-Up Areas

This area is where newly assembled aircraft receive preflight testing (refer to Figures 2-5, 2-6, and 2-7). This testing includes the fuel delivery system and the engine. The engine is operated at high speeds for periods long enough to ensure that these systems are fuel-tight and are ready for continuous service. Fuel leakage usually occurs when the systems are first pressurized.

There have been three recorded spills at these sites in the years between 1982-1984. In 1982, about 200 gallons of JP-5 spilled at the Engine Test House. In 1983, 30 gallons of J-5 (Jet Fuel) was spilled on the ground at the Engine Run-Up Area. In 1984, an unknown amount of oil and water in a mixture spilled at the Fuel Calibration Area.

2.3.5 Site 7: Fuel Depot

This site has experienced numerous spills during fueling/refueling operations at Calverton (refer to Figure 2-8). A total of 30 wells have been installed which monitor the contamination. In addition, a recovery well system is being designed to recover the product which is expected to be a light non-aqueous product (mostly diesel and gasoline).

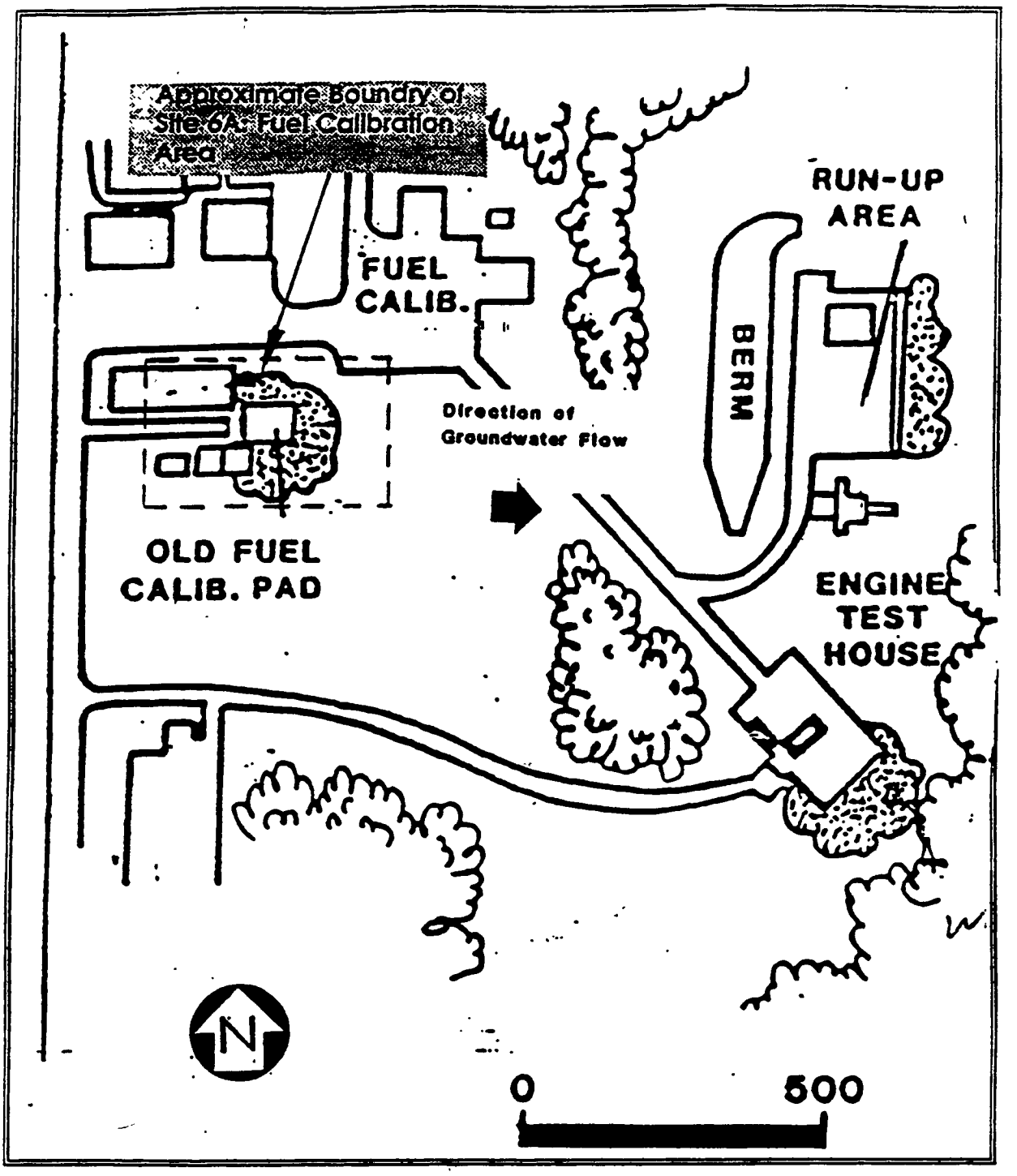


FIGURE 2-5 FUEL CALIBRATION AREA (SITE 6A)	NORTHERN DIVISION NWIRP, CALVERTON SITE INVESTITGATION

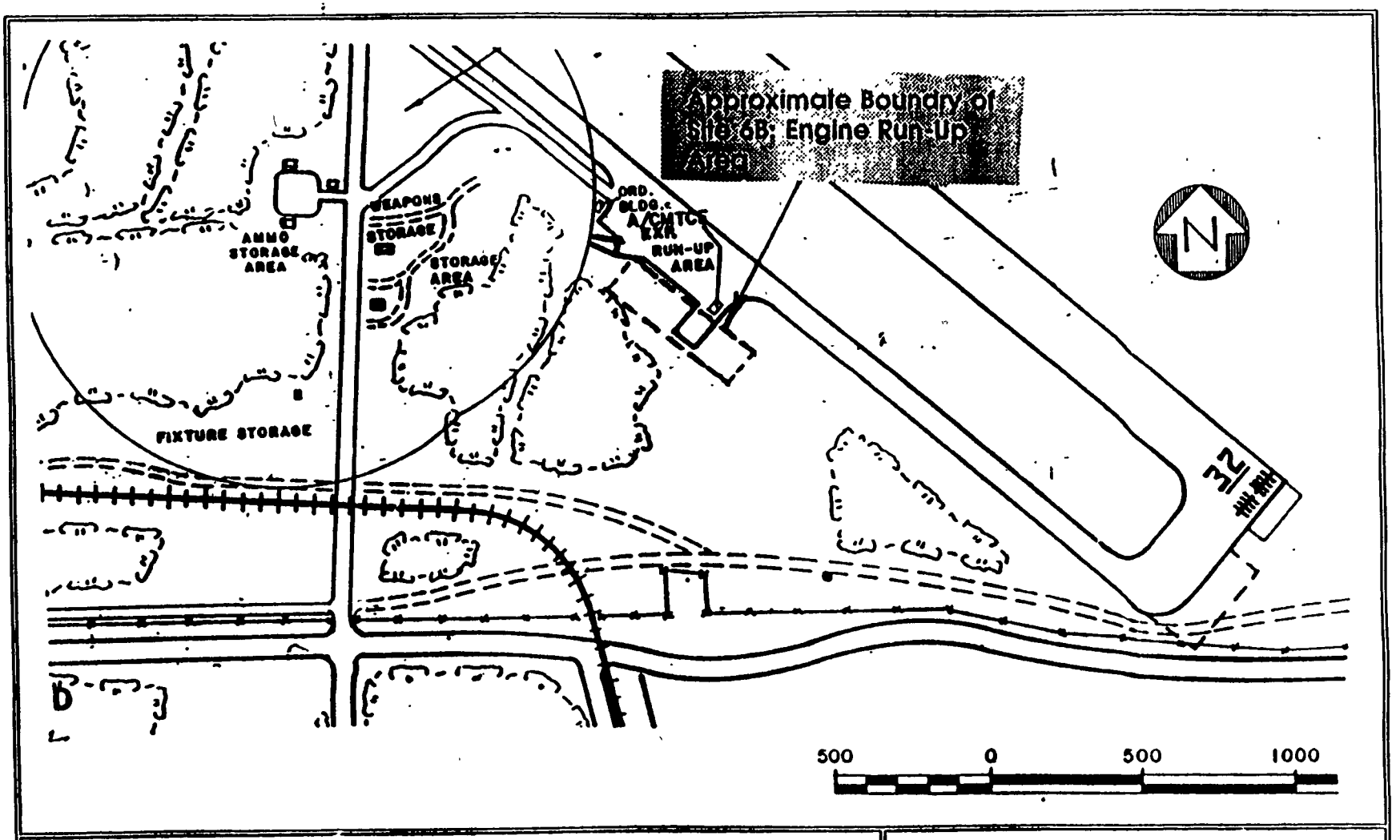


FIGURE 2-6

SITE PLAN
ENGINE RUN UP AREA
(SITE 6B)

NORTHERN DIVISION

NWIRP CALVERTON
SITE INVESTIGATION

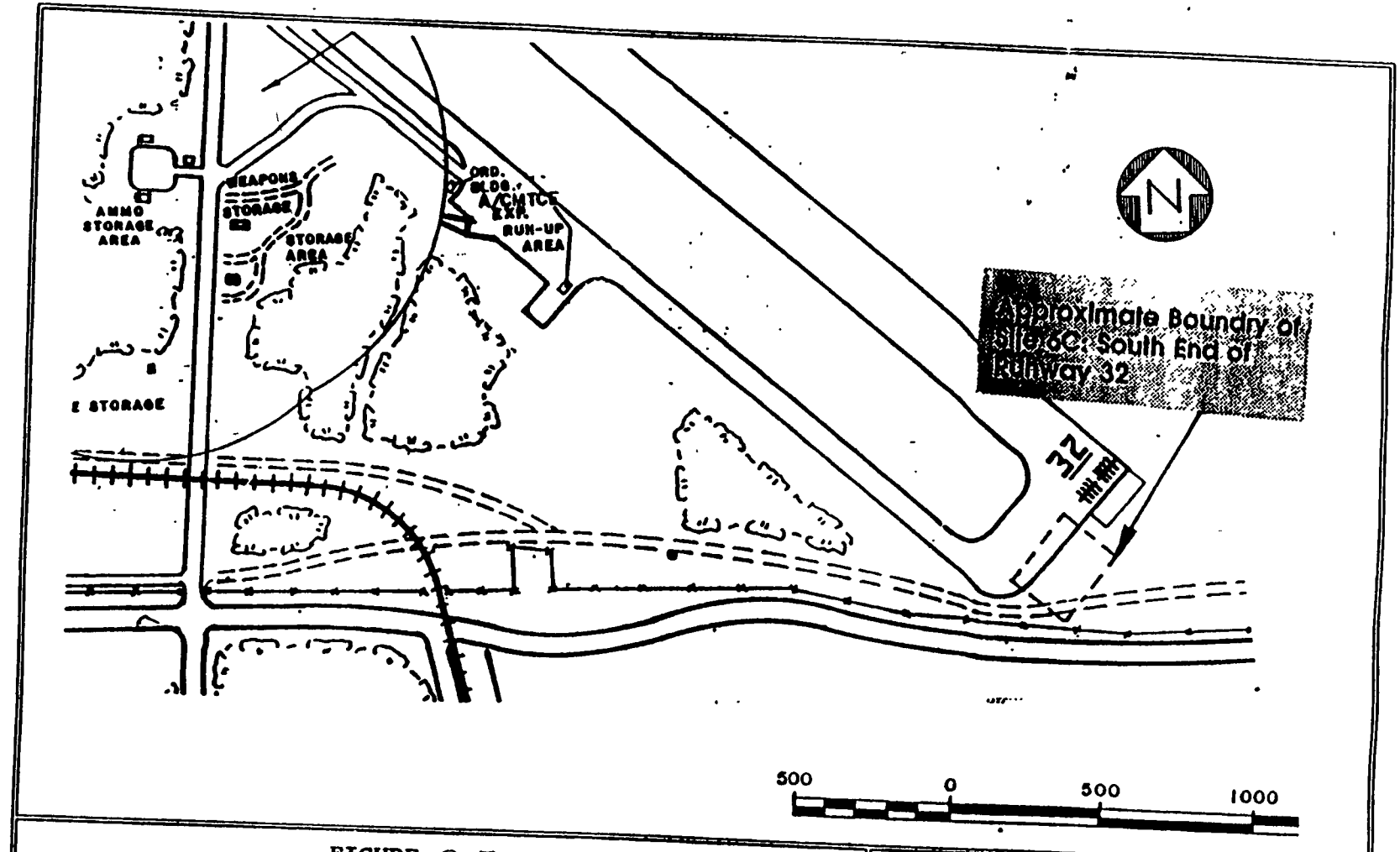


FIGURE 2-7

SITE PLAN
SOUTH END RUNWAY 32
(SITE 6C)

NORTHERN DIVISION

NWIRP CALVERTON
SITE INVESTIGATION

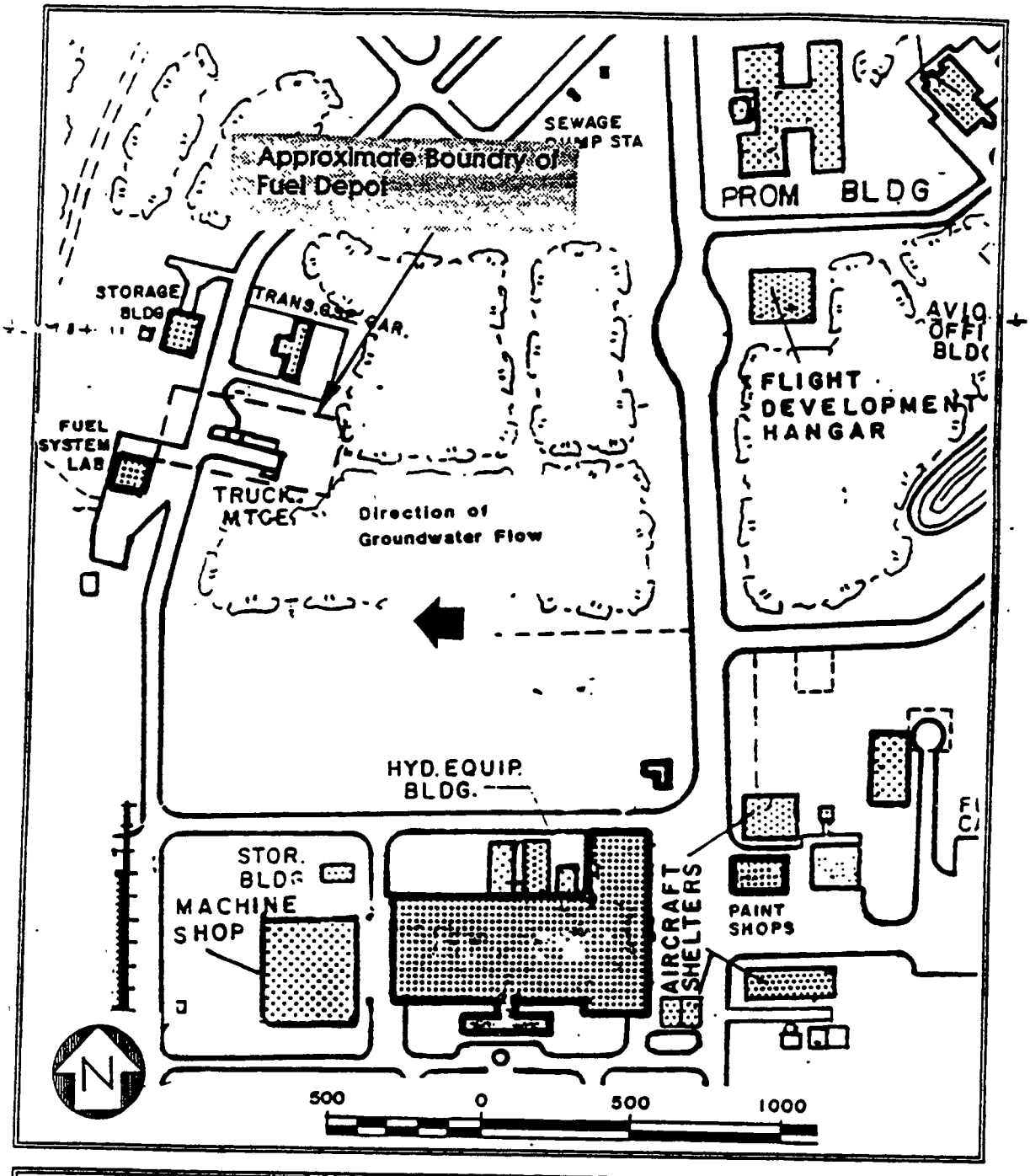


FIGURE 2-8. SITE PLAN FUEL DEPOT Site 7	NORTHERN DIVISION NWIRP, CALVERTON SITE INVESTITGATION

3.0 SCOPE OF WORK

3.1 SITES TO BE INVESTIGATED

The investigations will be performed at the individual sites recommended for further study as a result of the Preliminary Assessment. The sites and Scope of Work are as follows (refer to Figure 3-1 for locations):

Site	Type of Sampling
Site 1: Northeast Pond Disposal Area	Soil, Surface Water and Sediment Sampling
Site 2: Fire Rescue Training Area	Soil and Groundwater Sampling
Site 4: Picnic Grounds Disposal Area	Soil Sampling
Site 6A: Fuel Calibrations Area	Soil and Groundwater Sampling
Site 6B: Engine Run-Up Area	Soil Sampling
Site 6C: South and Runway 32	Soil Sampling
Site 7: Fuel Depot	Soil and Groundwater Sampling

Note: Drilling will be conducted at all sites (soil sampling).

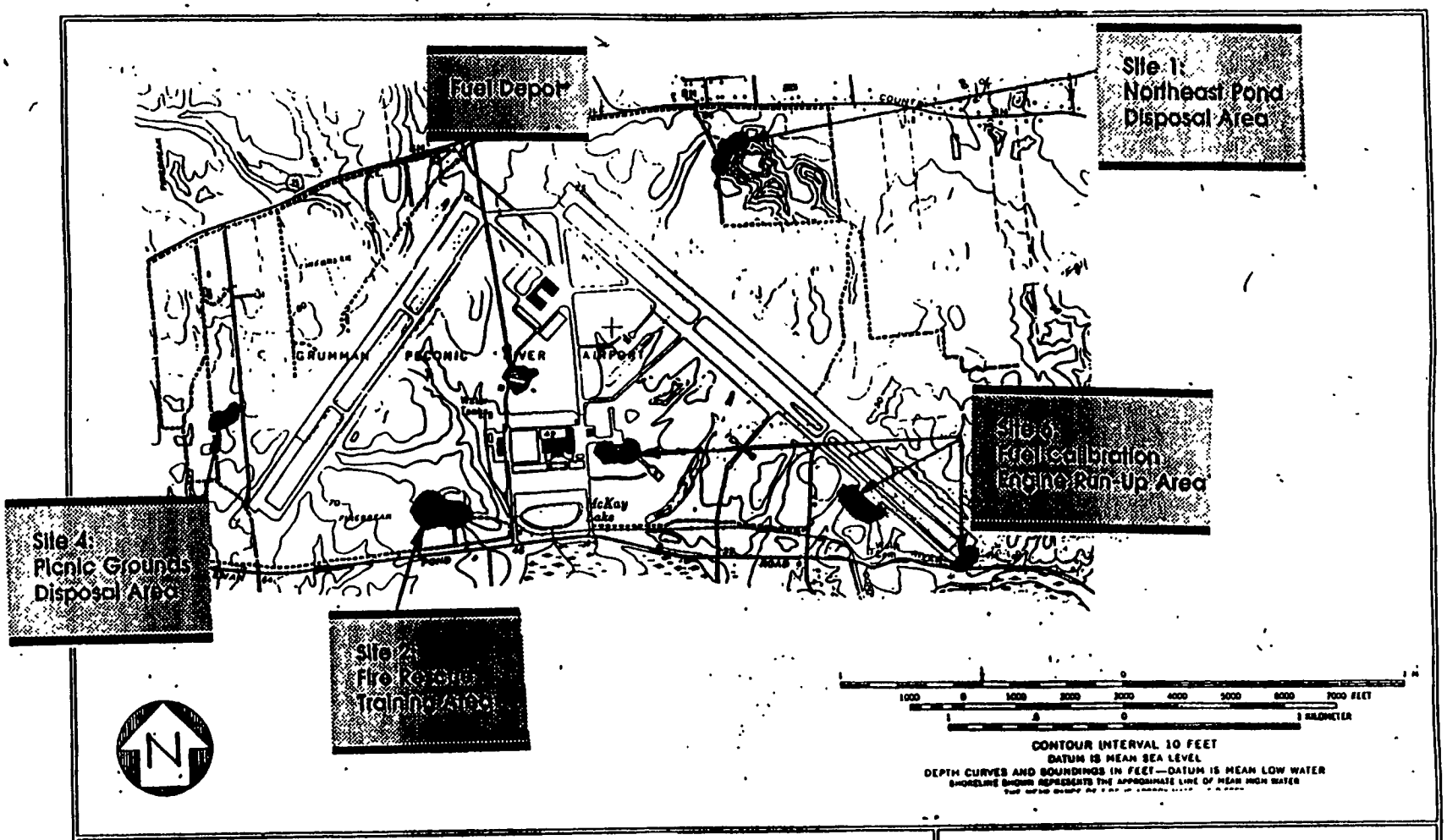


FIGURE 3-1

POTENTIAL HAZARDOUS WASTE
STUDY SITES

NORTHERN DIVISION

NWIRP CALVERTON
SITE INVESTIGATION

4.0 RISK ANALYSIS

4.1 CHEMICAL HAZARDS

4.1.1 Site 1: Northeast Pond Disposal Area

Scope of Work: Surface water and sediment sampling, soil sampling.

Suspected Contaminants: Construction debris, bulks of several 5-gallon pails, numerous 1-gallon paint pails containing small amounts of paint residue.

Risk Analysis: Moderate - potential exposure via skin absorption, eye contact, inhalation.

4.1.2 Site 2: Fire Rescue Training Area

Scope of Work: Soil sampling, groundwater sampling (sampling free-phase product layer in monitoring well).

Suspected Contaminants: Petroleum, oil, and lubricants (POLs), toluene, MEK, and soluble leads from gasoline.

Risk Analysis: Moderate - potential exposure via all routes of entry. Special precautions should be taken when sampling free-phase product layer in monitoring well and in soil disturbing activities due to potential lead content.

4.1.3 Site 4: Picnic Grounds Disposal Area

Scope of Work: Soil sampling.

Suspected Contaminants: Framing lumbar fencing, steel wall studs, steel stairways and ladders, tubular towbars, tubular steel supports.

Risk Analysis: Low - no known chemical contaminants on site.

4.1.4 Site 6A: Fuel Calibration Area

Scope of Work: Soil sampling, groundwater sampling (sampling free-phase product layer in monitoring well).

Suspected Contaminants: JP-5 (jet fuel), oil. Note: In 1984 an unknown amount of soil and water in a mixture spilled at the fuel calibration area.

Risk Analysis: Low to moderate - potential exposure via inhalation, skin absorption. Special precautions should be taken when sampling free-phase product layer in monitoring well.

4.1.5 Site 6B: Engine Run-Up Area

Scope of Work: Soil sampling

Suspected Contaminants: JP-5 (jet fuel). Note: In 1983 thirty (30) gallons of JP-5 jet fuel was spilled on the ground at the engine run-up area.

Risk Analysis: Low to moderate - potential exposure via inhalation and skin absorption.

4.1.6 Site 6C: South End of Run-Way 32

Scope of Work: Soil sampling.

Suspected Contaminants: JP-5 (jet fuel).

Risk Analysis: Low to moderate - potential exposure via inhalation and skin absorption.

4.1.7 Site 7: Fuel Depot

Scope of Work: Soil sampling, groundwater sampling (sampling free-phase product layer in monitoring well).

Suspected Contaminants: diesel, gasoline, lead (from gasoline).

Risk Analysis: Moderate - due to free-phase product layer, special precautions will be necessary.

4.2 CHEMICAL HAZARD OVERVIEW

The primary hazards associated with this investigation include potential exposure to petroleum and petroleum products, solvent (e.g. paints, toluene, MEK), and JP-5 jet fuel, via direct skin/eye contact; inhalation of vapors from these same products; and inhalation/ingestion of various metals and lead via suspended particulates. Additionally, due to the lack of analytical data, it must be assumed that there is a potential for existing unknown contaminants at each site. Therefore, these concerns will be given special consideration when establishing action levels. Table 4-1 presents the contaminants known or suspected to be present on each site and also outlines various toxicity data.

The use of real-time air monitoring instruments, visual observation, olfactory observation and personnel's perception of irritation will aid in the identification of exposure to site contaminants. Personal protective equipment (PPE) and standard work practices, Sections 6.0 and 12.0 of this plan, respectively, will be used when necessary to help reduce or eliminate exposures and therefore, reduce the potential for adverse health effects.

Another potential hazard is the generation of a flammable or oxygen-deficient atmosphere that could exist as a result of emissions from wells or boreholes. Because of this potential, it will be necessary to periodically monitor for combustible atmospheres within such enclosed spaces. Action levels regarding combustible gas/vapor monitoring are presented in Section 5.0.

4.3 PHYSICAL HAZARDS

Aside from the hazards presented by chemical substances, physical hazards must also be addressed. Physical hazards could involve the following items:

- Contact with energized sources
- Exposure to moving machinery, particularly during drilling activities
- Uneven or unstable terrain (slip, trip hazards)
- Strain or muscle pulls from manual lifting
- Noise in excess of 85 dBA
- Falls from elevated surfaces
- Heat stress (If PVC overalls are worn)

TABLE 4-1

POTENTIAL CHEMICAL HAZARDS

Substance	CAS No.(1)	Appearance and Odor	Sites Where Contaminant May be Present	Toxicity			C(3)
				PEL(2)	Route of Exposure	Symptoms of Exposure	
Toluene	108-88-3	Colorless liquid with a sweet, pungent odor.	2	100 ppm(4)	Inhalation absorption ingestion skin/eye contact	Fatigue, dizziness, headache, insomnia, dermatitis	
Methyl-ethyl-ketone (MEK)	78-93-3	Colorless liquid with a sharp mint-like odor.	2	200 ppm	Inhalation ingestion skin/eye contact	Irritation to eyes and nose; headache; dizziness	
Jet Fuel (JP-5)	mixture	Nearly colorless with a kerosene-like odor	6A, 6B, 6C, 7	None established	Inhalation absorption	Irritation to eyes, nose, throat dermatitis	
Lead	7439-92-1	Heavy, soft gray solid	2	0.05 mg/m3(5)	Inhalation skin/eye contact absorption	Insomnia, low weight, constipation, anemia	X

(1) CAS Number: Chemical Abstracts Service identification number.
(2) PEL: Permissable Exposure Limit established by OSHA.
(3) C: Data indicating the chemical is a suspected or confirmed carcinogen
(4) ppm: Volume of substance per million volumes of air.
(5) mg/m^3: Milligrams of substance per cubic meter of air.

Control efforts for these potential hazards include requirements that machinery on site (i.e., drill rigs) be kept properly maintained, positioned, guarded, and operated. No drilling masts or any other such projecting items shall be permitted within a 20-foot radius of energized overhead sources. Also, any areas targeted for subsurface investigation shall first be investigated to determine the presence of underground utilities.

Personnel shall be advised of hazards from contact with moving machinery pinch points. Personal protective clothing must fit properly and be taped, not only to minimize chemical exposure, but also to minimize potential entanglement with moving machinery. Additionally, equipment will be shut down and locked out before maintenance functions are performed. To protect against overhead hazards, personnel are to wear hard hats when required.

During lifting tasks, personnel are to lift with the force of the load carried by their legs and not by their backs. An appropriate number of personnel must be used when lifting or handling heavy equipment. These procedures are to be employed to minimize the potential for back strain.

The HSO will make a decision regarding the need to perform a noise survey of operations. In any event, ear protection will be available on site. If the results of such a survey identify potential personnel exposures to excessive noise levels, a site Hearing Conservation Program shall be developed and implemented in accordance with OSHA Regulation 29 CFR 1910.95.

Additional control measures for these physical hazards are included in Section 12.0, "Standard Work Practices," of this HASP.

The Hearing Conservation Program (Appendix B) shall be completed at project startup and be modified (if needed) throughout the project work.

5.0 AIR MONITORING AND CONTROL OF HEALTH HAZARDS

5.1 AIR MONITORING REQUIREMENTS

The primary mechanisms for the detection of site contaminants will be continuous monitoring with a photoionization detector (PID) with an 10.2 eV probe, the worker's sense of smell, and perception of irritation. Visual observation will aid in evaluating exposure to lead and possibly other contaminants which are in the form of (or could cling to) suspended particulates. Monitoring with an LEL/O_2 meter will also be necessary to identify potentially flammable and/or oxygen deficient atmospheres that could exist as a result of emissions generated by drilling operations. Monitoring should be conducted within the headspace of samples and boreholes to detect potential flammable conditions.

5.2 FREQUENCY OF MONITORING

Monitoring shall be conducted continuously during all drilling operations and periodically as work progresses and when there is potential for atmospheric change within the work area. Monitoring will be initiated at any potential source emissions, then moved to the worker's breathing zone if positive indications are observed at the source.

5.3 AIR MONITORING ACTION LEVELS

5.3.1 Modification to Level B

Supplied air (SCBAs or line-air respirators) will be used under the following criteria:

- Anytime positive HNU readings (above measured background levels) are observed in the worker's breathing zone.
- Anytime a sweet, mint, or kerosene-like order is perceived.

- Anytime irritation of the eyes, nose, throat or lungs is perceived by one or more of the team.

- Anytime work generates perceptible dust in the worker's breathing zone and or more of the action levels in this section (in addition to this one) becomes evident, consequently deeming Level C unacceptable.

5.3.2 Modification to Level C

Full-face air purifying respirators (APR's) equipped with organic vapor/acid gas cartridges with HEPA filters (MSA's GMCH cartridge), shall be used in accordance with the following criteria:

- Anytime work generates perceptible dust in the worker's breathing zone; unless dust can be controlled by other methods (e.g., wetting down areas of concern).

5.3.2 Action levels while monitoring with the LEL/O_2 meter

- If percent oxygen is measured less than 19.5 percent, work must stop and personnel must evacuate the area until oxygen levels stabilize and the situation can be re-evaluated.

- At 10 percent LEL, work shall proceed with caution, monitoring shall become more frequent, and personnel must use spark proof tools.

- At 20 percent LEL in the headspace of a sample or borehole activities must stop, and efforts must be taken to reduce levels before drilling (or any other activity) may continue.

5.4 METHODS OF MAINTENANCE AND CALIBRATION

All equipment maintenance and calibration efforts shall be conducted by a technician at the HALLIBURTON NUS warehouse/training facility. These efforts shall be performed in accordance with the following HALLIBURTON NUS Health and Safety Standard Operating Procedures. In addition, daily calibration of the HNU will be conducted by the SSO or his designee.

- No. ME01: Use, Calibration, and Maintenance of the HNU PI-101
- No. ME05: Combustible Gas Indicator
- No. ME02: Use, Calibration, and Maintenance of the OVA 128

5.5 FIELD CALIBRATION

Results of instrument calibration performed in the field must be recorded on Table 5-1 and returned to the Health Sciences Department with the Site Health and Safety Follow-up Report.

5.6 DIRECT-READING INSTRUMENT RESPONSE DATA

Any readings obtained through the use of direct-reading instruments must be recorded throughout the duration of project activities. This information is to be recorded on Table 5-2 and returned to the Health Sciences Department with the Site Health and Safety Follow-up Report, at the conclusion of project site activities.

5.7 RESPIRATORY PROTECTION PROGRAM (APPENDIX C)

The Respiratory Protection Program (Appendix C) will be completed at project startup and will be modified (if needed) throughout the project.

TABLE 5-1

DOCUMENTATION OF FIELD CALIBRATION

SITE NAME _____ PROJECT NO _____

Date of Calibration	Instrument Name and Model	NUS Instrument I D Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		

TABLE 5-2

DIRECT-READING INSTRUMENT RESPONSE DATA

SITE NAME _____ PROJECT NO _____

PAGE _____ OF _____

Date and Time(s)	Instrument Operator Name	Instrument Used	Instrument Reading and Duration	Location (e.g., Borehole vs. Breathing Zone	Operation(s) Being Performed	Personnel in Vicinity at Time of Readings and Level of PPE Worn
Example 12-12-91/14.30	Joe Field	HNu 101	15 ppm/15 min.	Breathing Zone	Installation of Well No. 12	Jim Technician/Level B, George Grunt/Level B

TABLE 5-2
DIRECT-READING INSTRUMENT RESPONSE DATA
PAGE TWO

SITE NAME _____ PROJECT NO. _____

PAGE _____ OF _____

Date and Time(s)	Instrument Operator Name	Instrument Used	Instrument Reading and Duration	Location (e.g., Borehole vs. Breathing Zone	Operation(s) Being Performed	Personnel in Vicinity at Time of Readings and Level of PPE Worn

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

6.1 PPE REQUIREMENTS (GENERAL)

All personnel must wear, as a minimum, steel toe/hard sole work boots and side shielded safety glasses while on site. Hard hats must be worn if personnel are within 20 feet of the drilling and drilling operations and/or if other conditions arise or exist where head protection may be necessary.

6.2 PPE REQUIREMENTS FOR DRILLERS AND ROUGHNECKS

All drilling personnel, and all other personnel who could come in contact with waste material, are required to wear, in addition to PPE listed above, standard Tyvek protective coveralls, nitrile outer gloves, latex inner gloves, boot covers, and taped ankle and wrist seams. PVC coveralls may be required if free-phase product, and/or heavily contaminated soil is encountered. Modification of PPE is at the discretion of the site safety officer (SSO).

6.3 PPE REQUIREMENTS FOR SAMPLERS

6.3.1 Soil Sampling (Sites 1, 2, 4, 6A, 6B, 6C, 7)

Boot covers, nitrile outer gloves, and latex inner gloves are required for all soil sampling activities. Standard Tyvek protective coveralls are required if heavily-contaminated soils are encountered and should be used as needed to keep work clothes free of mud and water. PVC coveralls may be necessary if free-phase product is encountered.

6.3.2 Groundwater Sampling (Sites 2, 6A, 7)

This sampling involves retrieving the free product layer, on top of the water, from monitoring wells. Personnel shall wear nitrile outer gloves and latex inner gloves for all groundwater sampling and Tyvek coveralls as needed to keep work clothes dry.

6.3.3 Surface Water and Sediment Sampling (Site 1)

Personnel shall wear boot covers and latex gloves when conducting these sampling activities along with the minimum requirements presented in Section 6.1.

7.0 SITE CONTROL MEASURES

7.1 EXISTING PERIMETER AND/OR ZONE CONTROLS

- Site secured
- Perimeter identified
- Map of contaminated zones
- Contaminated zones identified

7.2 OTHER CONTROL MEASURES

The following procedures and measures shall be observed to minimize the potentials for contaminant transfer personnel exposures, and overall general safety.

7.2.1 Delineation of Site Zones

A three-zone approach will be used to control migration of contamination. The exclusion zone is the work area where contamination is known to be present. The contamination reduction zone is where all decontamination activities will take place. Appropriate PPE must be worn in these two areas. The third zone, support zone, is the designated clean area where no contamination is present and all support personnel will be stationed and materials stored. All personnel and/or materials that enter the exclusion zone must be properly decontaminated before returning to the support area. Zones will be set up for each individual site at the NWIRP Calverton Site.

7.2.2 Buddy System

Personnel will adhere to the "buddy system" throughout the project and will work together to maintain a line of sight to each other.

7.2.3 Material Safety Data Sheet (MSDS) Requirements

HALLIBURTON NUS personnel must take an MSDS on site with them for every type of chemical brought on site. MSDS's shall be stored in a central location (e.g., office trailer) and will be available for review by anyone upon request. The Hazard Communication Program (Appendix D) must be completed at project startup and modified as necessary throughout the project.

7.2.4 Personal Protective Equipment (PPE)

Personnel will follow guidelines as set forth in Section 6.0, PPE. The Personal Protective Equipment Program (Appendix E) must be completed at project startup and be modified as necessary throughout the project.

7.3 IONIZING RADIATION

Normal background 0.01 to 0.02 mR/hr. If less than 2 mR/hr, continue investigation with caution. If greater than 2 mR/hr, evacuate site. Note: normal background is 10 to 20 counts per minute (CPM).

8.0 MEDICAL SURVEILLANCE

8.1 REQUIREMENTS FOR HALLIBURTON NUS PERSONNEL

All personnel participating in field activities associated with the investigations at the NWIRP Calverton facility will be required to have a current medical certificate. HALLIBURTON NUS employees are required to participate in the company medical monitoring program in order to perform field activities and must complete a medical data sheet (Figure 8-1). This is in accordance with Health and Safety Standard Operating Procedure (H&S SOP) No. MD01, Medical Program Operating Procedure, and OSHA Standard 1910.120. The HALLIBURTON NUS medical consultants (University of Pittsburgh Occupational Medicine Program) will make the final review of all HALLIBURTON NUS medical records to determine if additional testing is required.

8.2 REQUIREMENTS FOR SUBCONTRACTORS

Subcontractors involved in field activities at NWIRP Calverton are required to obtain a certificate of ability to perform their assigned task from a physician. An example of the Subcontractor Medical Approval Form can be found in Figure 8-2.

Also included in this section is an example of the OSHA Compliance Letter (Figure 8-3). All HALLIBURTON NUS subcontractors are to complete this form prior to initiation of work at this site. The illustrated statements must be typed on company letterhead and signed by an officer of the company.

This form must be completed by all onsite HALLIBURTON NUS personnel, prior to the commencement of activities, and shall be kept in the site command post during site activities. This form must be delivered to any attending physician, when medical assistance is needed.

Site _____

Name _____ Home Telephone (___) _____

Address _____

Date of most recent physical examination* ____/____/____

Age _____ Height _____ Weight _____

Name of next of kin _____ Telephone (___) _____

Drug allergies or other allergies _____

_____

Previous Illnesses or Exposures to Hazardous Substances:

_____

_____

Current Medication (prescription and nonprescription):

_____

_____

Medical Restrictions _____

_____

Name, address, and phone number of personal physician _____

_____

_____

*Confirmed by Site HSO _____ ____/____/____
Signature of HSO Date

FIGURE 8-1

MEDICAL DATA SHEET
NWIRP CALVERTON SITE

HALLIBURTON NUS
Environmental Corporation

For employees of _____
Company Name

Participant Name: _____ Date of Exam: _____

Part A

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f) and found to be medically -

   ( ) qualified to perform work at the _____ work site
   ( ) not qualified to perform work at the _____ work site

   and,

2. Undergone a physical examination as per OSHA 29 CFR 1910.134 (b)(10) and found to be medically -

   ( ) qualified to work in respiratory protection
   ( ) not qualified to work in respiratory protection

My evaluation has been based on the following information, as provided to be by the employer.

( ) A copy of OSHA Standard 29 CFR 1910.120 and appendices.
( ) A description of the employee's duties as they relate to the employee's exposures.
( ) A list of known/suspected contaminants and their concentrations (if known).
( ) A description of any personal protective equipment used or to be used.
( ) Information from previous medical examinations of the employee which is not readily available to the examining physician.

Part B

I, _____, have examined _____
Physician's Name (print) Participant's Name (print)

and have determined the following information:

1. Results of the medical examination and tests (excluding findings or diagnoses unrelated to occupational exposure):

   _____

   _____

   _____

FIGURE 8-2

SUBCONTRACTOR MEDICAL APPROVAL FORM NWIRP CALVERTON SITE

HALLIBURTON NUS *Environmental Corporation*

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

_____

_____

_____

3. Recommended limitations upon the employee's assigned work:

_____

_____

_____

_____

I have informed this participant of the results of this medical examination and any medical conditions which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the _work site, this participant

( ) may
( ) may not

perform his/her assignment task.

Physician's Signature _____

Address _____

Phone Number _____

NOTE: Copies of test results are maintained and available at:

_____
Address

FIGURE 8-2 (CONTINUED)

SUBCONTRACTOR MEDICAL APPROVAL FORM
NWIRP CALVERTON SITE

HALLIBURTON NUS
Environmental Corporation

LOGO
XYZ CORPORATION
555 E. 5th Street
Nowheresville, Kansas 55555

Month, day, year

Mr./Ms. (Name of HALLIBURTON NUS Project Manager)
HALLIBURTON NUS Environmental Corporation
Park West Two, Cliff Mine Road
Pittsburgh, Pennsylvania 15275-1071

Subject: OSHA Compliance

Dear Mr./Ms. (Name of HALLIBURTON NUS Project Manager):

As an officer of XYZ Corporation, I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with all applicable occupational safety and health regulations including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through 1910 and Part 1926.

I also understand that Title 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response: Final Rule," requires, but is not limited to, medical surveillance, for applicable employees, and appropriate level of training as required in paragraph (e) of 29 CFR 1910.120 for employees engaged in certain hazardous waste operations. I hereby state that I have reviewed these requirements; understand Title 29 of the CFR, Parts 1900 through 1910, and Part 1926; and that XYZ Corporation and all of its employees who will perform work at the NWIRP Bethpage facility are in full compliance.

The employees listed below meet the aforementioned training and medical surveillance requirements:

List Employees Names Here

Sincerely,

(Name of Company Officer)

FIGURE 8-3

OSHA COMPLIANCE LETTER
NWIRP CALVERTON SITE

HALLIBURTON NUS
Environmental Corporation

9.0 DECONTAMINATION

9.1 PERSONNEL DECONTAMINATION REQUIREMENTS

The decontamination of personnel and their protective clothing shall be performed in three stages. Stage 1 includes removing contamination from reusable protective clothing with a detergent/water solution and soft bristle scrub brushes. Stage 2 shall include removal of protective clothing (disposable items shall be discarded into a container conspicuously marked "Potentially Contaminated Clothing"). Stage 3 shall consist of workers washing hands and face with potable water and soap and/or leave the exclusion (or "Hot") zone. See Figure 9-1.

9.2 DECONTAMINATION OF SAMPLING TOOLS

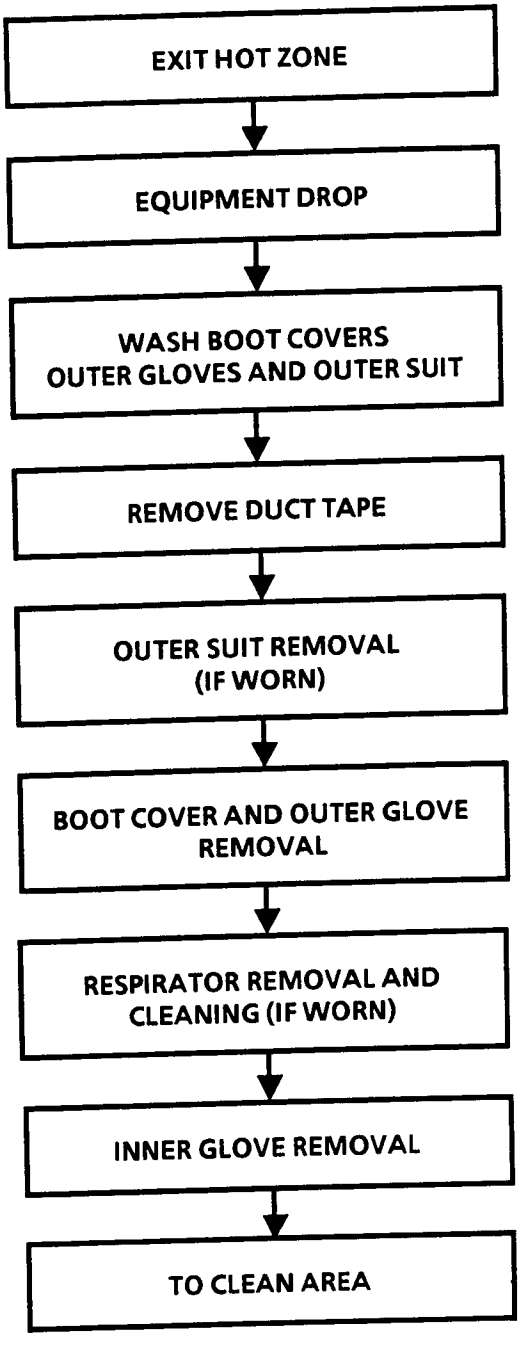
All sampling equipment that will be leaving the site will require a thorough decontamination. This can be accomplished either by steam cleaning or by a detergent wash and potable water rinse until tools are visibly clean. Decontamination of sampling tools to prevent cross contamination of samples shall be performed in accordance with the RFI Quality Assurance Project Plan. Waste fluids generated through decontamination shall be handled as described in Section 9.5. Any tools or equipment that cannot be satisfactorily decontaminated shall be treated as wastes, and be handled and disposed of accordingly.

9.3 CORING/DRILLING EQUIPMENT DECONTAMINATION

Coring/drilling equipment will be thoroughly decontaminated as necessary to remove detectable contamination utilizing a method stipulated by the HALLIBURTON NUS subcontractor that will not damage the equipment. All decontamination fluids shall be contained and handled as in Section 9.5.

9.4 PPE REQUIREMENTS FOR DECON OPERATIONS

All personnel performing decontamination activities must wear, in addition to minimal requirements, PVC coveralls, nitrile outer gloves, latex inner gloves, boot covers, and taped ankle and wrist seams. When decontaminating heavy equipment (drill rigs) or anything else where a splash potential exists from high-pressure water, personnel must wear hard hats with a chemical splash shield attached to protect the eyes and face. If respirators were necessary during field activities when using the



The sketch is for general decontamination procedures for operations at the NWIRP Calverton Site. The level of protection, concentration of chemicals (visual inspection), and other factors will determine the extent of decontamination. Decontamination procedures may have to be modified after work begins if site conditions warrant change.

FIGURE 9-1

SKETCH OF DECONTAMINATION PROCEDURE
NWIRP CALVERTON SITE

HALLIBURTON NUS
Environmental Corporation

equipment to be deconned, then the same respiratory protection is required for deconning that particular equipment.

9.5 DISPOSAL OF POTENTIALLY CONTAMINATED PPE AND DECONTAMINATION OF WASTE FLUIDS

- Personnel are responsible for drumming and staging all disposable PPE, labeling such container appropriately, taking it off site, and disposing of it properly. Questions regarding this practice should be directed to the project manager.

- All decontamination waste fluids will be sent to the onsite wastewater treatment plant. Direction can be taken from the client contact.

- Drill cuttings will be drummed, labeled, and disposed of properly. Questions regarding this procedure should be directed to the Project Manager.

10.0 TRAINING

10.1 INTRODUCTORY TRAINING

HALLIBURTON NUS employees and HALLIBURTON NUS subcontractors must complete a 40-hour introductory health and safety training class. HALLIBURTON NUS subcontractors must provide evidence of having received 40 hours of introductory health and safety training as defined by OSHA Standard 29 CFR 1910 120. Figure 10-1 presents the names and dates of training for HALLIBURTON NUS site personnel.

10.2 SITE-SPECIFIC TRAINING

HALLIBURTON NUS will provide site-specific training to all HALLIBURTON NUS employees and subcontractor personnel who will perform work at the Site. Site-specific training will include:

- Names of personnel and alternates responsible for site safety and health.
- Safety, health and other hazards present on the site.
- Use of personal protective equipment.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.
- The contents of the site safety and health plan.

10.2.1 Site-Specific Training Documentation

HALLIBURTON NUS and subcontractor personnel will be required to sign a statement indicating receipt of site-specific training and understanding of site hazards and control measures. Figure 10-2 will be used in this capacity.

Name	Type(s) of Training Received	Date(s) Training Received
Dave Brayack	Initial 40-Hour Health and Safety Training	05/88
	8-Hour Refresher	07/90
Kevin Kilmarton	Initial 40-Hour Health and Safety Training	11/89
	8-Hour Refresher	
Randy Patarcity	Initial 40-Hour Health and Safety Training	07/86
	8-Hour Refresher	12/90
Alan Margraf	Initial 40-Hour Health and Safety Training	08/88

FIGURE 10-1

PREVIOUS TRAINING RECORD

HALLIBURTON NUS
Environmental Corporation

Attendees	Subject-Coverage	Instructor	Date

FIGURE 10-2

SITE-SPECIFIC TRAINING RECORD

HALLIBURTON NUS
Environmental Corporation

11.0 EMERGENCY RESPONSE PLAN (ERP)

11.1 ANTICIPATED SITE EMERGENCIES

Personal injury/illness is the only reasonably foreseeable emergency anticipated during the investigation at the NWIRP Calverton facility.

11.2 PERSONNEL ROLES AND LINES OF AUTHORITY

The HALLIBURTON NUS Field Operations Leader (FOL) shall be responsible for the overall direction and implementation of this ERP, and for overall coordination of any emergency response actions.

The HALLIBURTON NUS site safety officer (SSO) shall serve as assistant and alternate to the FOL and shall provide health and safety input during emergencies.

The FOL or his alternate is responsible for notifying the appropriate outside emergency assistance, as needed, in accordance with Section 11.0 (Figure 11-1).

11.3 EMERGENCY RECOGNITION AND PREVENTION

Compliance with this HASP can assist in the prevention of anticipated site emergencies. These emergency situations can easily be recognized by visual observations, or worker complaints. Personnel will be working in close proximity to one another therefore eliminating the need for alarms or horns.

11.4 SAFE DISTANCES, PLACES OF REFUGE AND EVACUATION ROUTES

To be determined by the FOL/SSO prior to initiation of site activity. Considerations shall include wind direction and site topography.

11.5 SITE SECURITY AND CONTROL

Site control measures are typically employed during site activities to prevent or reduce the migration of potentially contaminated materials and to prevent the entry of unauthorized personnel into the work area.

Site: NWIRP Calverton Project No.: 3281

Emergency Information:

Local Resources:

Office:		
Ambulance (Name):	Base Contact	(516)953-6616
Hospital (Name):	Base Contact	(516)953-6616
Police (Local or State):	Base	(516)953-6616
Fire Department (Name):	Base	(516)953-6616
Nearest Phone:	TBA	
Project Manager:	Dave Brayack	(412) 747-7888
Site Health and Safety Officer:	Alan Margraf	(412) 747-7857
Alternate Site Health and Safety Officer:	Tom Dickson	(412) 747-7856

Emergency Contacts (Medical and Health):

- HALLIBURTON NUS Consulting Physician: Dr. Donald J. McGraw
  Office: (412) 648-3240
- Office Health and Safety Supervisor: Matthew M. Soltis, CSP
  Office: (412) 747-7846
- Manager of Health Sciences: Richard C. Gerlach, Ph.D., CIH
  Office : (412) 747-7843
  Home: (412) 531-8014
- Poison Information Center: Philadelphia (212) 922-5523
- National Response Center (for Environmental Emergency Only): 1-800-424-8802
- Office:

Special Instructions: Report any emergency to the base security office at (516)953-6616.

FIGURE 11-1

EMERGENCY REFERENCE INFORMATION (Post Onsite)

HALLIBURTON NUS Environmental Corporation

If HALLIBURTON NUS personnel or equipment are exposed to contamination, the project team shall ensure that proper decontamination procedures are followed. All decontamination liquids shall be contained to prevent migration outside the decontamination area.

The HALLIBURTON NUS project team shall observe site control measures which will prevent migration of contamination outside of the exclusion zone.

11.6 RESPONSE PROCEDURES

The information provided in this subsection is presented as a guideline to assist the FOL and SSO in safe and effective response to anticipated site emergencies. This information is in no way designed to take the place of reasonable decisions based on incident-specific information.

11.6.1 First Priority

Prevent further injury or illness by:

- Protecting response personnel
- Isolating the scene to authorized personnel only
- Rescuing the injured parties
- Notifying Outside Emergency Assistance (Figure 11-1)

11.6.2 Second Priority

Provide first-aid to those persons with life threatening injuries or illnesses (Attachment A-3).

11.6.3 Third Priority

Alleviate the immediate hazards.

11.6.4 Fourth Priority

Provide first-aid to those persons with non-lifethreatening injuries or illnesses and further efforts to alleviate the hazard.

11.6.5 Last Priority

Complete an incident report (included in Appendix A), critique the response and prevent recurrence.

All persons with known or suspected chemically related injuries or illnesses shall be immediately examined by a licensed physician. The examining physician may choose to consult with the HALLIBURTON NUS medical consultant for additional expertise on occupational injury/illness. Attachment A-4 provides notification procedures to access this resource at any time of the day or night.

11.7 DECONTAMINATION AND FIRST-AID

Decontamination of injured or ill personnel shall consist of removing contaminated clothing. If worker's street clothes are grossly contaminated, remove them to prevent chemical exposures and wrap the injured party in a blanket.

11.8 EMERGENCY PHONE NUMBERS

Numbers shall be posted at the nearest available telephone.

All site personnel including subcontractors shall complete a medical data sheet and field team review. This form shall accompany any injured party to the hospital.

See Figure 8-1 for medical data sheet.

11.9 EMERGENCY SPILL RESPONSE PROCEDURES

The Environmental Operations Department at NWIRP Calverton operates a spill response truck which responds to any accidental spills at the NWIRP Calverton facility. See Section 14.0 of this HASP for more information.

11.10 PROCEDURES FOR CONTACTING LOCAL, STATE, AND FEDERAL AGENCIES TO REPORT SITE INCIDENTS

Will be performed by Field Operations Leader.

11.11 FIRST AID

11.11.1 Emergency First-Aid Procedures

See Attachment D.

11.11.2 Other

Administer necessary first-aid (see attached American Red Cross Information sheet, Figure 11-3), contact offsite medical facilities, implement Emergency Physician Access Plan.

11.12 EMERGENCY PROCEDURE FOR OVERT PERSONNEL EXPOSURE

- Skin Contact: Remove contaminated clothing. Wash immediately with water. Use soap, if available.

- Inhalation: Remove from contaminated atmosphere. Use artificial respiration, if necessary. Transport to hospital.

- Ingestion: Never induce vomiting on an unconscious person. Also, never induce vomiting when acids, alkalis, or petroleum products are suspected. Contact the Poison Control Center.

American Red Cross

First Aid

EMERGENCY TELEPHONE NUMBERS

Police: _____
Fire Dept.: _____
Doctor: _____
Ambulance: _____
Hospital: _____
Poison Control Center: _____

BITES Animal Bites - Thoroughly wash the wound with soap and water Flush the area with running water and apply a sterile dressing Immobilize affected part until the victim has been attended by a physician. See that the animal is kept alive and in quarantine. Obtain name and address of the owner of the animal

Insect Bites - Remove "stinger" if present. Keep affected part down below the level of the heart Apply ice bag For minor bites and stings apply soothing lotions, such as calamine.

BURNS AND SCALDS Minor Burns - DO NOT APPLY VASELINE OR GREASE OF ANY KIND. Apply cold water applications until pain subsides. Cover with a dry, sterile gauze dressing. Do not break blisters or remove tissue Seek medical attention

Severe Burns - Do not remove adhered particles of clothing. Do not apply ice or immerse in cold water Do not apply ointment, grease or vaseline Cover burns with thick sterile dressings. Keep burned feet or legs elevated. Seek medical attention immediately.

Chemical Burns - Wash away the chemical soaked clothing with large amounts of water. Remove victim's chemical soaked clothing If dry lime, brush away before flushing. Apply sterile dressing and seek medical attention.

CRAMPS Symptoms - Cramps in muscles of abdomen and extremities. Heat exhaustion may also be present.

Treatment - Same as for heat exhaustion.

CUTS Apply pressure with sterile gauze dressing, and elevate the area until bleeding stops Apply a bandage and seek medical attention

EYES Foreign Objects - Keep the victim from rubbing his his eye. Flush the eye with water If flushing fails to remove the object, apply a dry, protective dressing and consult a physician

Chemicals - Flood the eye thoroughly with water for 15 minutes Cover the eye with a dry pad and seek medical attention

FAINTING Keep the victim lying down Loosen tight clothing If victim vomits, roll him onto his side or turn his head to the side. If necessary wipe out his mouth. Maintain an open airway Bathe his face gently with cool water. Unless recovery is prompt, seek medical attention.

FRACTURES Deformity of an injured part usually means a fracture. If fracture is suspected, splint the part, DO NOT ATTEMPT TO MOVE INJURED PERSON, seek medical attention immediately

FROSTBITE Symptoms - Just before frostbite occurs skin may be flushed, then change to white or grayish-yellow Pain may be felt early then subsides. Blisters may appear, affected part feels very cold and numb.

Treatment - Bring victim indoors, cover the frozen area, provide extra clothing and blankets. Rewarm frozen area quickly by immersion in warm water---NOT HOT WATER DO NOT RUB THE PART Seek medical attention immediately.

HEAT EXHAUSTION Caused by exposure to heat - either sun or indoors. Symptoms - Near normal body temperature. Skin is pale and clammy. Profuse sweating, tiredness, weakness, headache, perhaps cramps, nausea, dizziness, and possible fainting

Treatment - Keep in lying position and raise victim's feet Loosen clothing, apply cool wet cloths If conscious, give sips of salt water (1 teaspoon of salt per glass) over a period of one hour If vomiting occurs, discontinue the salt water Seek medical attention immediately.

SUNSTROKE Symptoms - Body temperature is high (106 degrees F or higher) Skin is hot, red, and dry Pulse is rapid and strong Victim may be unconscious

Treatment - Keep victim in lying position with head elevated Remove clothing and repeatedly sponge the bare skin with cool water or rubbing alcohol. Seek medical attention immediately

POISONING Call the poison control center for instruction on immediate care. If victim becomes unconscious, keep the airway open. If breathing stops give artificial respiration, by mouth to mouth breathing Call an emergency squad as soon as possible.

POISON IVY Remove contaminated clothing; wash all exposed areas thoroughly with soap and water followed by rubbing alcohol. If rash is mild, apply calamine or other soothing skin lotion. If a severe reaction occurs, seek medical attention

PUNCTURE WOUNDS If puncture wound is deeper than skin surface, seek medical attention. Serious infection can arise unless proper treatment is received.

SPRAINS Elevate injured part and apply ice bag or cold packs. DO NOT SOAK IN HOT WATER If pain and swelling persist, seek medical attention

UNCONSCIOUSNESS Never attempt to give anything by mouth. Keep victim lying flat, maintain open airway If victim is not breathing provide artificial respiration by mouth to mouth breathing and call an emergency squad as soon as possible.

FIGURE 11-2

AMERICAN RED CROSS INFORMATION SHEET

HALLIBURTON NUS
Environmental Corporation

12.0 STANDARD WORK PRACTICES

All site investigation activities will follow the appropriate Health and Safety Standard Operating Procedures.

The following safe working procedures are to be applied in addition to the Health and Safety Standard Operating Procedures:

- Eating, drinking, chewing gum or tobacco, taking medication, and smoking are prohibited in the exclusion or decontamination zones, or any location where their is a possibility for contact with site contaminants exists.

- Upon leaving the exclusion zone, hands and face must be thoroughly washed. Any protective outer clothing is to be decontaminated and removed as specified in this HASP, and left at a designated area prior to entering the clean area.

- Contact with potentially-contaminated substances must be avoided. Contact with the ground or with contaminated equipment must also be avoided. Monitoring equipment must not be placed on potentially contaminated surfaces.

- No facial hair, which interferes with a satisfactory fit of the mask-to-face seal, is permitted on personnel required to wear respiratory protective equipment.

- All personnel must procure a site-specific Health and Safety Plan from the project Health and Safety Officer prior to commencing work on site. All site personnel must read and understand all components of this HASP. Additionally, a Site Safety Follow-up report must be filed with each trip report following completion of a task.

- All personnel must satisfy medical monitoring procedures.

- No flames or open fires will be permitted on site.

- No drilling within 20 feet in any direction of overhead power lines will be permitted. The locations of all underground utilities must be identified, documented, and marked prior to initiating any subsurface activities.

- All personnel must be aware of and follow the action levels presented in this HASP for upgrading respiratory protection.

- Any new analytical data must be promptly conveyed via telephone to the project Health and Safety Officer by the lab technician or Field Team Leader.

- Personnel must develop hand signals with the driller.

- A copy of the attached OSHA poster must be prominently posted at each site.

- All drill rigs and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation, and periodically thereafter. The driller and helper shall not simultaneously handle moving augers or flights unless there is a standby person to activate the emergency stop.

- The driller must never leave the controls while the tools are rotating unless all personnel are clear of the rotating equipment.

- A long handled shovel or equivalent must be used to clear drill cuttings away from the hole and from rotating tools. Hands and/or feet are not to be used for this purpose.

- A remote sampling device must be used to sample drill cuttings if the tools are rotating. Samplers must not reach into or near the rotating equipment. If personnel must work near any tools which could rotate, the driller must shut down the rig prior to initiating such work.

- Drillers, helpers and samplers must secure all loose clothing when in the vicinity of drilling operations.

- Only equipment which has been approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together. Pins that protrude from augers shall not be allowed.

- No person shall climb the drill mast while tools are rotating.

- No person shall climb the drill mast without the use of ANSI-approved fall protection (i.e., approved belts, lanyards and a fall protection slide rail) or portable ladder which meets the requirements of OSHA standards.

- "All" compressed gas cylinders (empty or full) must be stored and used in an upright position, properly secured and protected from damage.

- The site safety officer must make an entry into the Health and Safety logbook each day, including monitoring instrument calibration logs.

- A copy of the appropriate Health and Safety Standard Operating Procedures must be present on site.

- Appropriate training and medical monitoring records must be maintained on site for all site personnel including subcontractors.

- All site personnel including subcontractors must complete a medical data sheet, to be maintained on site.

- Site personnel must immediately notify NUS Health Sciences (the OHSS or SSO) of all incidents for OSHA recordkeeping purposes.

- If personnel note any warning properties of chemicals (irritation, odors, symptoms, etc.) or even remotely suspect the occurrence of exposure, they must immediately notify the SSO for further direction.

- Site personnel are not to undertake any activity which would be considered a confined-space entry without first being trained in the proper procedures by the SSO, and obtaining a Confined Space/Limited Egress Permit.

- Areas must be designated for chemical storage. Acids, bases and flammables shall all be stored separately. Storage areas must be labeled as to the contents within the storage area.

The SSO must make an entry into the site health and safety logbook at least daily, to include:

- Weather conditions
- Site Personnel
- New arrivals and "clearance for site work"
- Air monitoring data summary
- Indications of inhalation exposure
- PPE used per task
- Deviations from HASP
- Inspection and cleaning of respiratory equipment
- General H&S problems/corrective actions

13.0 CONFINED SPACE ENTRY (CSE) PROCEDURES

There are no confined space entry operations anticipated for this project; therefore, this section is not applicable.

14.0 SPILL CONTAINMENT PROGRAM

14.1 SPILL RESPONSE PROCEDURES

In case of an accidental spill, notify the onsite security at (516)953-6616. This department can contact a spill response truck which responds to any accidental spills at the NWIRP Calverton facility. The FOL shall activate the Emergency Response Plan specified in this HASP, as appropriate, with assistance from the SSO.

15.0 FIELD TEAM REVIEW

Must be signed by each field team member prior to the site visit.

I have read and understand the contents of this HASP and will comply to its provisions, requirements, and restrictions.

Site _____

Name (PRINT)	Signature	Date

APPENDICES

APPENDIX A

SITE HEALTH AND SAFETY FOLLOW-UP REPORT

SITE HEALTH AND SAFETY FOLLOW-UP REPORT

This section must be filled out and returned to the Site Health and Safety Officer after the conclusion of each site visit.

Person responsible for follow-up report: _____

Actual date(s) of work: _____

Actual Project Team:

HALLIBURTON NUS Personnel:	Discipline/Tasks:

Non-HALLIBURTON NUS Personnel/Application:	

PERSONAL PROTECTIVE EQUIPMENT

• Level of Respiratory Protection Used	Activity Performed

• Field Dress	Activity

REQUEST FOR HASP MODIFICATION

(To be Completed for Each Field Change in Plan)

Describe, in detail, requested changes to the Health and Safety Plan:

_____

_____

_____

_____

_____

_____

Reason for changes: _____

_____

_____

_____

_____

_____

Follow-up, Review and Evaluation Prepared by: _____ Date _____

Discipline _____

Approved by: Site Manager _____ Date _____

Site Health and Safety Officer _____ Date _____

Approved by: Office Health & Safety Supervisor _____ Date _____

GENERAL SAFETY

Were any health or safety problems encountered while on site?

Explain: _____

_____

_____

_____

_____

INCIDENT REPORT INFORMATION

Did any team member report:	Yes	No
• Chemical exposure		
• Illness, discomfort, or unusual symptoms		
• Environmental problems (heat, cold, etc.)		
• Injury		

Explain: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Was an Employee Incident Report Completed? ___ Yes ___ No

Evaluation of Site Health and Safety Plan

Was the Health and Safety Plan adequate? _____ yes _____ no

What changes would you recommend?

_____

_____

_____

_____

_____

FIRST AID SUPPLIES USAGE FORM

Project No.	Date	Item(s) Used	Kit No.

Please submit this information as soon as possible to to the HALLIBURTON NUS/Environmental Technologies Group Equipment Manager for first-aid supply replenishment. Telephone number (412) 262-4583

SCBA LOG

Site: _____

Location: _____

Dates of Investigation: _____

User	Date of Use	SCBA No.	Satisfactory Check-Out (Yes/No - Initials)	Date Cleaned

SCBA Performance Comments:

_____ _____

Site Manager Date

Return to HSO at Completion of Activity

AIR PURIFYING RESPIRATOR LOG

Type of Respirator: _____

Site: _____

Location: _____

Dates of Investigation: _____

User	Date of Use	Cleaned and Inspected Prior To Use (Initials)	Cartridges Changed Prior to Use (Yes/No)	Total Hours On Cartridge

_____ _____

Site Manager Date

Return to HSO at Completion of Activity

EMPLOYEE INCIDENT REPORT

Report No. _____

Site: _____ Project No. _____

Location: _____

Date of Report: _____ Preparer's Name: _____

Name and Address of Injured: _____ SSN: _____ Age: _____

_____ Sex: _____

Years of Service: _____ Time of Present Job: _____ Title/Classification: _____

Division/Department: _____ Date of Incident: _____ Time: _____

Incident Category: _____ Motor Vehicle _____ Property Damage _____ Fire

_____ Chemical Exposure _____ Near-Miss _____ Other

Severity of Injury or Illness: _____ Nondisabling _____ Disabling

_____ Medical Treatment _____ Fatality

Amount of Damage: $_____ Property Damage: _____

Estimated Number of Days Away from Job: _____

Nature of Injury or Illness: _____

Classification of Injury:

_____	Fractures	_____	Heat Burns	_____	Cold Exposure
_____	Dislocations	_____	Chemical Burns	_____	Frostbite
_____	Sprains	_____	Radiation Burns	_____	Heat Stroke
_____	Abrasions	_____	Bruises	_____	Heat Exhaustion
_____	Lacerations	_____	Blisters	_____	Concussion
_____	Punctures	_____	Toxic Respiratory Exposure	_____	Faint/Dizziness
_____	Bites	_____	Toxic Ingestion	_____	Toxic Respiratory
_____	Respiratory Allergy			_____	Dermal Allergy

Part of Body Affected: _____

Degree of Disability: _____

Date Medical Care was Received: _____

Where Medical Care was Received: _____

Address (if off site): _____

Incident Location

Causative agent most directly related to accident (object, substance, material, machinery, equipment, conditions): _____

_____

_____

_____

Was weather a factor? _____

Unsafe mechanical/physical/environmental condition at time of accident (Be specific):

_____

_____

_____

Unsafe act by injured and/or others contributing to the accident (Be specific, must be answered):

_____

_____

_____

Personal factors (improper attitude, lack of knowledge or skill, slow reaction, fatigue):

_____

_____

_____

Level of personal protection equipment required in Site Safety Plan:

_____

_____

_____

Modifications: _____

_____

_____

_____

Was injured using required equipment: _____

_____

_____

If not, how did actual equipment use differ from plan? _____

_____

_____

_____

What can be done to prevent a recurrence of this type of accident (modification of machine; mechanical guards; correct environment; training)?

_____

_____

_____

Detailed narrative description (how did accident occur, why; objects, equipment tools used, circumstances, assigned duties). Be specific:

_____

_____

_____

(Use back of sheet, as required)

Witnesses to accident: _____

_____

_____

Signature of Preparer _____

Signature of Site Manager _____

Department Appraisal and Recommendation

In your opinion, what actions or equipment contributed to this accident?

_____

_____

_____

Your recommendation:

_____

_____

_____

Date: _____ Signature of Department Manager _____

FOR HEALTH AND SAFETY USE ONLY

Temporary total _____

Death or permanent total _____

Started losing time _____

Returned to work _____

Time charge _____

Compensation $_____

Other $_____

Permanent partial _____

Part of body _____

Percent loss or

loss of use _____

Time charge _____

Medical $_____

Total $_____

Name and Address

of Hospital _____

_____

Name and Address

of Physician _____

_____

cc: OHSS

Administrative Manager

MHS

Medical Consultant

INCIDENT FOLLOW-UP REPORT

Date of Incident: _____

Name: _____ Employee No. _____

Site: _____

Brief description of incident: _____

_____

_____

_____

_____

_____

_____

Outcome of incident: _____

_____

_____

_____

_____

_____

_____

Physician's recommendations: _____

_____

_____

_____

_____

_____

_____

Date returned to work: _____

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

cc: OHSS
Administrative Manager
MHS
Medical Consultant

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discrimination.

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

Proposed Penalty

The Act provides for mandatory penalties against employers of up to $1,000 for each serious violation and for optional penalties of up to $1,000 for each nonserious violation. Penalties of up to $1,000 per day may be proposed for failure to correct violations within the proposed time period. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $10,000 for each such violation.

Criminal penalties are also provided for in the Act. Any willful violation resulting in death of an employee, upon conviction, is punishable by a fine of not more than $10,000, or by imprisonment for not more than six months, or by both. Conviction of an employer after a first conviction doubles these maximum penalties.

Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

Such voluntary action should initially focus on the identification and elimination of hazards that could cause death, injury, or illness to employees and supervisors. There are many public and private organizations that can provide information and assistance on this effort if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

Consultation

Free consultative assistance, without citation or penalty, is available to employers, on request, through OSHA supported programs in most State departments of labor or health.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia
Boston, Massachusetts
Chicago, Illinois
Dallas, Texas
Denver, Colorado
Kansas City, Missouri
New York, New York
Philadelphia, Pennsylvania
San Francisco, California
Seattle, Washington

Telephone numbers for these offices, and additional area office locations, are listed in the telephone directory under the United States Department of Labor in the United States Government listing.

Washington, D.C.
1988 (Revised)
OSHA 2203

Ann McLaughlin, Secretary of Labor

U.S. Department of Labor
Occupational Safety and Health Administration

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or a facsimile) in a conspicuous place where notices to employees are customarily posted.

GPO 1988 O - 219-667

APPENDIX B

HEARING CONSERVATION PROGRAM

APPENDIX B	HEALTH AND SAFETY STANDARD OPERATING PROCEDURES	Number HS2.13	Page 1 of 3
		Effective Date 08/01/90	Revision 1
		Applicability All Project Activities	
		Prepared G. Beswick, CIH	
Subject HEARING CONSERVATION PROGRAM		Approved R. E. Stecik, Jr.	

CONTENTS

1.0 PURPOSE

To establish the requirements of a minimally acceptable hearing conservation program in accordance with OSHA 29 CFR 1910.95.

2.0 SCOPE OF COVERAGE

This procedure covers all ARCS III projects where noise exposures may equal or exceed an 8-hour time-weighted average sound level of 85 decibels measured on the "A" scale (slow response).

3.0 DEFINITIONS

OSHA - Occupational Safety and Health Administration
OHSS - Office Health and Safety Supervisor
HSSO - Health and Safety Site Officer
HSO - Health and Safety Officer
dBA - Decibels on the "A" weighted scale

4.0 RESPONSIBILITIES

PM - Is responsible for the development and implementation of a written hearing conservation program, as required by this procedure, for the projects under his/her control.

FTL - Is responsible for field implementation of the program.

HSSO - Is responsible for providing technical assistance to the FTL for field implementation of the program and to audit compliance with the program.

OHSS - Is responsible for providing technical expertise in the area of program development, at the request of the PM.

HSO - Is responsible for auditing the overall compliance with the procedure

5.0 PROCEDURES

The written program required as part of this procedure must include all elements specified by OSHA 29 CFR 1910.95.

5.1 AVAILABILITY

The written program must be available on-site and must be available for review by all site employees, their representatives or OSHA inspectors.

5.1.1 Short Duration Projects

For investigation projects, where each field task is scheduled for less than 1 month, a general hearing conservation program developed for corporate use will satisfy the requirements of this procedure.

5.1.2 Long Duration Project/Remediation Projects

Any investigation project where a field task is scheduled for greater than 1 month in duration and/or any remediation project must have a completed form HS2.13-1 or equivalent on-site. This form is designed to allow the OHSS and HSSO develop a hearing conservation program which is specific to the site.

SITE-SPECIFIC HEARING CONSERVATION PROGRAM

1.0 MONITORING

Noise monitoring will be conducted in accordance with OSHA 29 CFR 1910.95 by:

_____
Name/Title

Noise monitoring will consist of (check all that apply):

_____ Sound level meter survey
_____ Noise dosimeter monitoring

The specific instrument to be used is _____
Make/Model

The monitoring devices will be calibrated at a frequency of _____ and documented in the _____.

The monitoring strategy is as follows: (List all equipment on site which may produce sound pressure levels above 80 dBA and an explanation of the strategy to document actual exposures.)

_____
_____
_____
_____
_____
_____

All monitoring will be documented utilizing the format illustrated following Section 7.0 (attach form developed for the specific site). These forms will be maintained in accordance with Section 7.0 of this program.

Monitoring will be repeated at a frequency of _____ and anytime the following changes occur:

_____

_____

_____

_____

2.0 EMPLOYEE NOTIFICATION

All site employees exposed above 85 dBA as an 8-hour time-weighted average (TWA) will be notified of the results of the monitoring by _____
Name/Title

at an interval not to exceed _____ after the monitoring has been completed.

Notification shall be (check all that apply):

_____ Verbal

_____ Written

Notifications shall be documented in the health and safety logbook with appropriate signatures of employees notified.

3.0 OBSERVATION OF MONITORING

Prior to noise monitoring, all employees affected by the monitoring or a designated representative shall be given the opportunity to observe the monitoring. This will be accomplished by:

_____

_____

4.0 AUDIOMETRIC TESTING PROGRAM AND REQUIREMENTS

ARCS III personnel who perform field activities are required to participate in the HALLIBURTON NUS medical monitoring program which includes an audiometric test program meeting the requirements of OSHA 29 CFR 1910.95. Additionally, any subcontractors performing work on HALLIBURTON NUS projects who will be exposed to noise levels exceeding 85 dBA will be required to provide

documentation that they participate in an audiometric testing program which meets the requirements of 29 CFR 1910.95. Documentation of participation in the testing program will be maintained by _____ and will be located at _____.

5.0 HEARING PROTECTORS AND ESTIMATING ATTENUATION

A selection of suitable hearing protectors will be made available to all employees who are expected to have 8-hour TWA noise exposures above 85 dBA. The types anticipated to be available include:

_____ Attenuation _____
_____ Attenuation _____
_____ Attenuation _____

Hearing protector attenuation will be evaluated by _____ for specific noise environments according to the following method prior to determining their suitability for use:_____
_____
_____
_____

The following site personnel will be required to wear hearing protectors during specific activities as determined in accordance with 29 CFR 1910.95 and the results of site-specific monitoring conducted according to Section 1.0 of this program. (This section can be completed after monitoring, if necessary.)

Name	Activity	Type of Protection Required

Upon initial distribution to site workers, hearing protectors will be properly fitted by _____ and a record of the size and type of protector will be recorded in the PPE form found in HALLIBURTON NUS SOP No. HS2.11-1.

Training in the use and care of hearing protectors shall be conducted by _____ during the initial site-specific health and safety training as part of the PPE training required by HALLIBURTON NUS SOP No. HS2.11-1. The contents of the training shall be in accordance with 29 CFR 1910.95.

Hearing protectors will be distributed by _____ from the storage location at the _____.

6.0 ACCESS TO INFORMATION AND TRAINING MATERIALS

All information required by 29 CFR 1910.95 to be made available to the employees will be posted by _____ at the _____.
Name/Title

Attached is a copy of the OSHA standard 29 CFR 1910.95. This will be posted onsite by _____.

7.0 RECORDKEEPING

All records required by 29 CFR 1910.95 shall be completed by _____ and maintained at the _____ and placed on permanent file at the _____, for the minimum duration required by the standard.

Employees can access these records by contacting _____.
Name/Title

All records required by this section will be transferred to any employees successive employer if _____ ceases to do business.
Company Name

APPENDIX C

RESPIRATORY PROTECTION PROGRAM

APPENDIX C	HEALTH AND SAFETY STANDARD OPERATING PROCEDURES	Number HS2.10	Page 1 of 4
		Effective Date 08/01/90	Revision 1
		Applicability All Project Activities	
		Prepared G. Beswick, CIH	
Subject RESPIRATORY PROTECTION PROGRAM		Approved R. E. Stecik, Jr.	

CONTENTS

1.0 PURPOSE

To establish the requirements for a minimally acceptable respiratory protection program in accordance with OSHA 29 CFR 1910.134.

2.0 SCOPE

This procedure is applicable to all HALLIBURTON NUS field activities where respiratory protective equipment is used and/or available on-site.

3.0 DEFINITIONS

PM - Project Manager.
FTL - Field Team Leader.
OHSS - Office Health and Safety Supervisor.
HSSO - Health and Safety Site Officer.
HSO - Health and Safety Officer.
SOPS - Standard Operating Procedure.
OSHA - Occupational Safety and Health Administration

Action Level - A pre-established reading on any monitoring instrument which requires an upgrade, downgrade or reevaluation of respiratory protection.

Oxygen Deficient Atmosphere - Any work area atmosphere which contains less than 19.5 percent oxygen by volume.

Toxic Environment - Any work area atmosphere which has an airborne concentration of greater than 1/2 the current TLV, PEL, REL, or other accepted safe exposure level. Additionally, any work area which contains measurable concentrations of unknown contaminants will be considered a toxic environment.

SCBA - Self-Contained Breathing Apparatus.

APR - Air-Purifying Respirators.

TLV - Threshold Limit Value as defined by the American Conference of Governmental Industrial Hygienists (ACGIH).

PEL - Permissible Exposure Limit as defined by the Occupational Safety and Health Administration (OSHA).

REL - Recommended Exposure Limit as defined by the National Institute for Occupational Safety and Health (NIOSH).

4.0 RESPONSIBILITIES

PM - Is responsible for the development and implementation of a written respiratory protection program, as required by this procedure, for the projects under his/her control.

FTL - Is responsible for field implementation of the program.

HSSO - Is responsible for providing technical assistance to the FTL for field implementation of the program and to audit compliance with the program.

OHSS - Is responsible for providing technical expertise in the area of program development, at the request of the PM.

HSO - Is responsible for auditing the overall compliance with this procedure.

5.0 PROCEDURES

The written program required as part of this procedure must include all elements specified by OSHA 29 CFR 1910.134(b) and must be consistent with the site-specific Health and Safety Plan.

5.1 AVAILABILITY

The written program must be available on-site and must be available for review by all site employees, their representatives or OSHA inspectors.

5.1.1 Short Duration Projects

For investigation projects where each site task is scheduled for less than one month, a general respiratory protection program developed for corporate use will be sufficient.

5.1.2 Long Duration Project/Remediation Projects

Any investigation project where a site task is scheduled for greater than one month in duration and/or any remediation project must have a completed form HALLIBURTON NUS SOP No. HS2.10-1 or equivalent on site. This form is designed to allow the OHSS and HSSO to develop a respiratory protection program which is specific to the site.

SITE-SPECIFIC RESPIRATORY PROTECTION PROGRAM FOR THE _____SITE

1.0 SELECTION OF RESPIRATORY PROTECTION

All respiratory protection used by HALLIBURTON NUS personnel must be selected according to HALLIBURTON NUS SOP No. HS2.02. In order to simplify this procedure for field implementation, the following action levels have been determined for this project:

Activity/Location	Action Level/Monitoring Equipment	Required Protection (Be Specific)

2.0 USE OF RESPIRATORY PROTECTION

Based on the site-specific chemical hazards and the anticipated site activities, the following respiratory protection is anticipated to be used at this project.

Activity	Respiratory Protection Anticipated

- Respiratory protection utilized to prevent exposures to toxic chemicals must only be used when accepted engineering controls are not feasible. Administrative controls (i.e. worker rotation) are <u>not</u> considered an accepted control measure to reduce personnel exposures on hazardous waste sites.

- Only approved respiratory protective equipment which has been properly selected for the job (HALLIBURTON NUS SOP No. HS2.02) shall be used by HALLIBURTON NUS personnel.

- In areas where an employee, because of a failure of a respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional person shall be present. Communications (voice, visual or signal line) shall be maintained between all individuals present. Planning shall be such that one individual will be unaffected by any likely incident and he/she will have the necessary rescue equipment to assist the others in case of emergency.

- All personnel on-site <u>must</u> be properly fit-tested (HALLIBURTON NUS SOP No. HS2.02) for <u>each</u> type of equipment available on-site. The personnel qualified to perform this

testing are _____ The records of all fit-tests for site personnel are maintained by _____ and can be reviewed at _____.

- All personnel on-site must be trained in the proper use of each type of respiratory protective equipment available. The following are qualified to conduct this training: _____. The training for each type of equipment must be commensurate with HALLIBURTON NUS SOP No. HS2.04 for SCBA and HS2.06 for APR. Records of this training are maintained by _____ and may be reviewed at _____.

- Respirators shall not be worn when conditions exist which prevent a good face-to-facepiece seal. These conditions include, but are not limited to, the growth of a beard on sideburns, a skull cap which projects under the facepiece, or the use of regular corrective glasses because the temple bars prohibit a proper seal. Also, the absence of one or both dentures can seriously affect the fit of any respiratory protection.

- Workers shall only use the respiratory protective equipment which has been assigned to them. Assignment of respiratory equipment will be conducted by _____ in the following manner _____
_____
_____
_____

- Contact lenses shall not be worn while using respiratory protection.

- All individuals required to use respiratory protection must successfully pass a physical examination and receive written approval from the examining physician to use both positive and negative pressure respiratory protection. The written approvals for all site personnel are maintained by _____ and may be reviewed at _____.

- The actual use of all respiratory protective equipment shall conform to the manufacturer's operating instructions and training provided to the employee. A copy of all operating instructions for each type of equipment is maintained by _____ and may be reviewed at _____.

- Use of SCBA and APR will be documented by _____ using HALLIBURTON NUS SOP No. HS2.09 Attachment A (SCBA) and Attachment B (APR). These logs will be kept current on a daily basis and can be reviewed at _____.

- Respirator Cleaning - All Respirators must be cleaned and disinfected at a frequency necessary to insure that the proper protection is provided to the wearer. Those used by more than one worker must be cleaned and disinfected after each use.

  In order to accomplish this task a respiratory cleaning station has been set up at _____. This station includes the following items to assist in the cleaning process: _____

  _____

  _____

  _____

  _____

The following instructions will be posted at the respirator cleaning station to ensure adequate cleaning and disinfection: _____

_____

_____

_____

_____

_____

_____

Based on project logistics, respiratory protection will be cleaned and disinfected by _____. The following schedule for cleaning and disinfection will be followed:

Equipment	Cleaning Schedule	Disinfection Schedule

3.0 RESPIRATOR INSPECTION

All respiratory protection equipment used on a routine basis must be inspected during cleaning. Worn or deteriorated parts must be immediately replaced or the unit tagged and taken out of service. Respirators for emergency use must be inspected at least every 30 days and after each use. Additionally, all respiratory protective equipment must be inspected by the HSSO, regardless of use, and the condition documented on a suitable form signed by the HSSO.

The inspection procedure for each type of equipment will follow the manufacturer's recommended procedure (HALLIBURTON NUS SOP No. HS2.05 and HS2.08 contain information for MSA equipment). The specific procedures to be used are available on-site and can be reviewed by contacting _____.

The following schedule will be followed by the HSSO in implementing the inspection requirements:

Equipment	Inspection Date	Person Responsible

4.0 RESPIRATOR STORAGE

All respiratory protection utilized by HALLIBURTON NUS employees must be stored in a convenient, clean, and sanitary location and according to specific manufacturer recommendations. Special attention must be paid to protecting respiratory protection from dusty conditions, temperature extremes, and potential contamination during storage.

The following storage procedures will be utilized for equipment used on a routine basis (i.e., storage during non-use periods of a workshift or storage between workshifts): _____

_____

_____

_____

All equipment not routinely used will be stored according to the procedures outlined below:

_____

_____

_____

_____

_____

Any equipment not assigned to specific site personnel will be stored under the supervision of _____. This equipment will be stored at _____ following the procedures outlined below:

_____

_____

_____

_____

_____

5.0 SURVEILLANCE OF WORK AREA

- Appropriate monitoring of the work area conditions shall be performed frequently to establish the degree of employee exposure or stress. In order to simplify this surveillance, the following procedures have been determined for this project:

Monitoring Equipment Used	Frequency of Surveillance	Personnel/Area Being Monitored

Records of the above surveillance will be recorded on the following forms: (Attach blank field documentation format to be used). Completed forms will be maintained by _____ and can be reviewed at _____.

6.0 QUALITY ASSURANCE OF BREATHING AIR

Compressed air utilized for respiratory protection shall be of high purity. Breathing air shall meet at least the requirements of the specification for Grade D breathing air as established by the Compressed Gas Association. The following specifications must be certified by the vendor/supplier:

Oxygen Content - 19.5 percent to 23.5 percent

Contaminant	Maximum Allowed
Carbon Monoxide (CO)	20 ppm
Carbon Dioxide ($C0_2$)	1000 ppm
Condensed Hydrocarbons	5 mg/m3
Objectional odors	None

Documentation assuring that breathing air meets the above specifications will be obtained by _____ by requesting such documentation from the vendor or supplier.

Site personnel can review this documentation in the _____.

7.0 PROGRAM EVALUATION

- There will be regular inspections and evaluations to determine the continued effectiveness of this program. Documentation will be maintained by _____, and can be reviewed in the _____.

The program will be evaluated in the following manner:

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX D

HAZARD COMMUNICATION PROGRAM

APPENDIX D	HEALTH AND SAFETY STANDARD OPERATING PROCEDURES	Number HS2.12	Page 1 of 3
		Effective Date 08/01/90	Revision 1
		Applicability All Project Activities	
		Prepared G. Beswick, CIH	
Subject HAZARD COMMUNICATION PROGRAM		Approved R. E. Stecik, Jr.	

CONTENTS

1.0 PURPOSE

To establish the requirements for a minimally acceptable hazard communication program in accordance with OSHA 29 CFR 1910.1200.

2.0 SCOPE

This procedure covers all ARCS III field activities where hazardous substances are used and/or stored as defined by OSHA 29 CFR 1910.1200.

3.0 DEFINITIONS

Hazardous Substances - See OSHA 29 CFR 1910.1200.

MSDS - Material Safety Data Sheet

HSSO - Health and Safety Site Officers

HSO - Health and Safety Officer

OHSS - Office Health and Safety Supervisor

OSHA - Occupational Safety and Health Administration

4.0 RESPONSIBILITIES

PM - Is responsible for the development and implementation of a written hazard communication program, as required by this procedure, for the projects under his/her control.

FTL - Is responsible for field implementation of the program.

HSSO - Is responsible for providing technical assistance to the FTL for field implementation of the program and to audit compliance with the program.

OHSS - Is responsible for providing technical expertise in the area of program development, at the request of the PM.

HSO - Is responsible for auditing the overall compliance with this procedure

5.0 PROCEDURES

The written program required as part of this procedure must include all elements specified by OSHA 29 CFR 1910.1200.

5.1 AVAILABILITY

The written program must be available on-site and must be available for review by all site employees, their representatives, or OSHA inspectors.

5.1.1 Short Duration Projects

For investigation projects where each field task is scheduled for less than one month, a general hazard communication program developed for corporate use will be sufficient.

5.1.2 Long Duration Project/Remediation Projects

Any investigation project where a field task is scheduled for greater than one month in duration and/or any remediation project must have a completed form HS2.12-1 or equivalent on site. This form is designed to allow the OHSS and HSSO develop a hazard communication program which is specific to the site.

HAZARD COMMUNICATION PROGRAM

Site Name: _____

Location: _____

1. Person responsible for the Hazard Communication Program: _____

_____

2. Inventory of hazardous substances is attached and also located: _____

_____

3. Material Safety Data Sheets (MSDSs) for all hazardous substances are located at:

_____

4. Employees may review MSDSs and the standard by following this procedure:

_____

_____

MSDSs not on hand , that are requested by employees, will be requested of suppliers within 7 days by letter.

5. The MSDS file is updated with new information and new hazards identified by:

_____

Any new hazards will be reported immediately to: _____

_____ and affected employees notified within 30 days.

6. Containers of hazardous materials entering the site will be checked by _____

_____

to assure that they are properly labeled with the chemical name of the contents, the appropriate hazard warning and the name and address of the supplier or manufacturer.

7. On site containers of hazardous materials will be labeled with the chemical name and hazard warning. Exceptions must be approved by _____.

The following exceptions have been approved: _____

_____

_____

8. Non-routine tasks involving hazardous materials are: _____

_____

Procedures for complying with the Hazard Communication Standard for these jobs are the following: _____

_____

_____

9. Employee training is provided initially to all employees and for all new employees. This training covers the following areas:

   a. The basic requirements of the Hazard Communication Standard and their right to information on chemical hazards.
   b. Our company's program to comply with the standard, and procedures to follow to see the standard, company program, and MSDSs.
   c. How to interpret and use the labels on containers of hazardous materials.
   d. The potential physical hazards and health effects of the hazardous substances and how to use MSDSs for more information.
   e. How to handle the hazardous substances safely and other protective measures in place.
   f. What to do in an emergency, release or over-exposure to the chemicals
   g. How the presence of hazardous chemicals can be detected in the work area.

10. This training is documented in the following manner: _____

    _____

    Records are maintained at the following location: _____

    _____

11. Training concerning new hazards (new chemicals or new information on MSDSs) will be provided within 30 days and documented.

12. Periodic refresher training will be provided and documented as follows: _____

    _____

    _____

    _____

13. Outside employees (subcontractors and visitors) will be advised of chemical hazards at our site in the following manner: _____

    _____

    Contractors will be required to provide information on any chemicals used at this site as a condition of their contract.

Our company relies on the information contained in MSDSs as permitted by the OSHA Hazard Communication Standard and does not perform independent hazard determinations.

Reviewed and approved:

OHSS _____ Date _____

APPENDIX E

PERSONAL PROTECTIVE EQUIPMENT PROGRAM

APPENDIX E	HEALTH AND SAFETY STANDARD OPERATING PROCEDURES	Number HS2.11	Page 1 of 3
		Effective Date 08/01/90	Revision 1
		Applicability All Project Activities	
		Prepared G. Beswick, CIH	
Subject PERSONAL PROTECTIVE EQUIPMENT PROGRAM		Approved R. E. Stecik, Jr.	

CONTENTS

1.0 PURPOSE

To establish site-specific requirements for a minimally acceptable personal protective equipment program (PPE) in accordance with OSHA 29 CFR 1910.120.

2.0 SCOPE

This procedure covers all ARCS III field activities where PPE is used or available on site, excluding respiratory protection (HALLIBURTON NUS SOP No. HS2.10).

3.0 DEFINITIONS

PM - Project Manager
FTL - Field Team Leader
PPE - Personal Protective Equipment
OHSS - Office Health and Safety Supervisor
HSSO - Health and Safety Site Officer
HSO - Health and Safety Officer
OSHA - Occupational Safety and Health Administration
CPC - Chemical Protective Clothing
SOP - Standard Operating Procedure

4.0 RESPONSIBILITIES

PM - Is responsible for the development and implementation of a written personal protective equipment program, as required by this procedure, for the projects under his/her control.

FTL - Is responsible for field implementation of the program.

HSSO - Is responsible for providing technical assistance to the FTL for field implementation of the program and to audit compliance with the program.

OHSS - Is responsible for providing technical expertise in the area of program development, at the request of the PM.

HSO - Is responsible for auditing the overall compliance with this procedure.

5.0 PROCEDURES

The written program required as part of this procedure must include all elements specified by 29 CFR 1910.120(g)(5) and must be consistent with the Health and Safety Plan.

5.1 AVAILABILITY

The written program must be available on-site and must be available for review by all site employees, their representatives or OSHA inspectors.

5.1.1 Short Duration Projects

For investigation projects where each field task is scheduled for less than one month, a general PPE program developed for corporate use will be sufficient.

5.1.2 Long Duration Project/Remediation Projects

Any investigation project where a field task is scheduled for greater than one month in duration and/or any remediation project must have a completed form HALLIBURTON NUS SOP No. HS2.11-1 or equivalent on site. This form is designed to allow the OHSS and HSSO develop a personal protective equipment program which is specific to the site.

HS2.11-1

SITE-SPECIFIC PERSONAL PROTECTIVE EQUIPMENT PROGRAM FOR THE _____ SITE

1.0 SITE HAZARDS AND PPE SELECTION

1.1 CHEMICAL HAZARDS

The following table lists the site-specific chemical hazards for this project which require the use of chemical protective clothing (CPC) as determined in accordance with Section 5.1.4 of HALLIBURTON NUS SOP No. HS1.01.

Substance	*Media	Maximum Expected Concentration

* List all that apply; Groundwater (GW), soil (S), surface water (SW), and/or air (A).

1.2 CPC SELECTION

Table HS2.11-1-2 lists the general items and types of CPC selected for use on this project. This equipment was selected based on the substances present, their maximum expected concentrations, and the potential for contact and the resistiveness of available protective clothing, in accordance with HALLIBURTON NUS SOP No. HS2.03.

TABLE HS2.11-1-2

*Item	**Type of Material

*Items Available

Outer Gloves
Inner Gloves
Splash Apron
Face Shield
Fully-encapsulated Suit
Chemical Splash Goggles
Boot Covers
Coveralls
Others
Coveralls with Hoods

**Materials Available

Nitrile
Silvershield
Tyvek
Butyl
Polyethylene (PE)
Polyvinyl Chloride (PVC)
Polyvinyl Alcohol (PVA)
Natural Rubber
Viton
Neoprene
Sarnex
Other (Specify)

1.3 PHYSICAL HAZARDS AND CONTROLS

Table HS2.11-1-3 lists the physical hazards which may be present at this project and the applicable item(s) of PPE which have been selected to protect site workers based on the activities, equipment, environmental conditions, etc. anticipated to be present. Physical hazards which are controlled by means other than PPE are also listed with their respective control measures.

TABLE HS2.11-1-3

*Physical Hazard	**PPE or Control

*Hazards to Consider

Moving, falling or flying objects.
Work above ground level.
Pinch-points, nip points, rotating machinery.
Noise sources.
Contact with energized sources.
Heavy objects to lift.
Uneven, unstable or slippery walking surfaces.
Handling glass objects.
Fire/explosion.
Heat stress/cold stress.
Biological Factors (poison ivy/oak, insects, snakes, etc.)

**PPE and Controls to Consider

Hard Hats
Puncture Resistant Gloves
Steel Toe/Hard Sole Workboots
Leather Work Gloves
Safety Glasses/Goggles/Face-shields
Work/Rest Regime
Electrolyte Drinks
Hearing Protection
Fall Protection
Life-lines/Retrieval-lines
Shin Guards
Explosion Shields
Life-vests
Lineman Insulated Gloves
Fire Extinguishers (Specify Type)

2.0 PPE USE AND DONNING PROCEDURES

2.1 USE

Table HS2.11-1-4 lists the specific work activities for the _____ site and the required PPE to be used for each task in accordance with the items selected previously in this program and HALLIBURTON NUS SOP No. HS2.03.

TABLE HS2.11-1-4

Task	PPE Required

2.2 DONNING

PPE shall be donned in accordance with the design of the equipment. Special procedures include:

Example: Tape ankle and wrist seams.

2.3 ADDITIONAL USE REQUIREMENTS

PPE shall be used in accordance with OSHA 29 CFR 1910 Subpart I.

All loose clothing shall be properly secured to prevent it from becoming caught in moving machinery.

All persons shall be deemed medically qualified to wear PPE prior to use. Medical Approval Forms will be maintained by _____ at the _____.

3.0 WORK MISSION DURATION AND LIMITATIONS DURING TEMPERATURE EXTREMES

Chemical degradation or permeation of CPC and worker heat/cold stress can significantly affect the length of time a person can work in CPC. Based on the chemicals and concentrations anticipated to be encountered and the anticipated ambient air temperatures, the following restrictions shall apply to this project.

Activity	Restriction

Modifications to these restrictions shall be based on the findings of the in-use monitoring as outlined in Section 8.0 "PPE In-Use Monitoring" of this program.

4.0 MAINTENANCE AND STORAGE

PPE will be maintained and stored in accordance with the manufacturers' recommendations and the applicable ARCS III SOP's.

PPE maintenance at this project will be performed by _____ or _____.

PPE at this project will be stored in/at the _____. The person responsible for storage and issuing PPE is _____. Reusable PPE which is potentially contaminated shall be stored at/in the _____.

5.0 PPE DECONTAMINATION AND DOFFING PROCEDURES

PPE decontamination shall be performed in accordance with HALLIBURTON NUS SOP No. HS1.02. The following decontamination requirements shall apply to this project (√ all that apply):

____ Contaminant Removal from Outer Surfaces of Reusable PPE
____ Contaminant Removal from Outer Surfaces of Disposable PPE
__√__ Doffing (removal) of PPE
____ Disposal of Contaminated PPE
____ Disposal of Decontaminated PPE
__√__ Personal Hygiene Procedures
____ On Site Laundering of Potentially Contaminated Work Clothes
____ Off Site Laundering of Potentially Contaminated Work Clothes
____ Other _____

The following describes, in detail, all decontamination requirements which have been selected (√) for this project, including the two minimum requirements of doffing procedures and personal hygiene:

6.0 PPE TRAINING AND FITTING

All site personnel will be given site-specific PPE training as part of the site-specific health and safety training required by OSHA 29 CFR 1910.120. Documentation of the training shall be in accordance with HALLIBURTON NUS SOP Nos. HS1.13 and HS1.14. Personnel will receive training on each item of PPE required by Section 2.1 of this program. Minimum requirements shall include the need for PPE, proper use, and limitations. Other requirements are as follows:

_____

_____

_____

_____

PPE training shall be conducted by _____ prior to the worker using the item of PPE.

All site personnel shall be properly fitted for each item of PPE required by the "Use" section of this program.

PPE fitting (other than respiratory protection) shall be conducted by the person responsible for PPE storage and distribution, namely _____, who will maintain a record of sizes as described below:

PPE FIT RECORDS

Worker	Item (Size)
Example: John Doe	Nitrile Gloves (11), Boot Covers (12), Tyvek (XLG)

7.0 PPE INSPECTION

PPE shall be inspected, in accordance with the manufacturers' recommendations, by the person issuing the PPE and by the worker.

Worker inspections shall be conducted before, during, and after each use.

The following inspection criteria shall apply to this project for the items of PPE anticipated to be used:

Item	Inspection Criteria
Example: Nitrile Gloves	No holes or signs of chemical degradation

8.0 PPE IN-USE MONITORING

PPE in-use monitoring shall include observations of chemical degradation or permeation of CPC and signs or symptoms of heat/cold stress.

Site workers are encouraged to report any perceived problem or difficulties with PPE to _____, to include skin irritations, unusual residues on PPE, discomfort, fatigue, interference with vision or communication, restrictions of movement, or any signs or symptoms of heat stress such as rapid pulse, nausea, or chest pains.

Additional in-use monitoring shall be conducted by _____ as described below:

Degradation/Permeation Monitoring:

_____

_____

_____

Heat/Cold Stress Monitoring (ARCS III SOP Nos. HS1.09 and HS1.10):

_____

_____

_____

9.0 PROGRAM EVALUATION

This program shall be evaluated by _____ at a frequency of _____ in accordance with the following guidelines:

_____

_____

_____

_____

_____

_____

These evaluations shall be documented in the field health and safety logbook.